

# Honors Math Analysis: Functions and Relations

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
									I		E	M			
<b>District Objective</b> *Analyze and draw conclusions based on information from the tables and graphs including graphs in the coordinate plane. <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> V B, C		<b>Quarter</b> I <b>No. Days</b> 1	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>IV. Data Analysis, Statistics and Probability (Algebra I)</b> A. Translate from one representation of data to another and understand that data can be represented using a variety of tables, graphs, and symbols and that different modes of representation often convey different messages. C. Formulate and answer questions based on data shown on graphs, tables, charts; make valid inferences, predictions, and arguments.													<b>NCTM Standard</b> P. 305-306 P. 342-346 P. 354-364		
<b>Text Correlation</b> P.1, Pgs. 2-11 P.6, Pgs. 67-75								<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or graphing calculator. Flask Functions Activity Comparing Rates of Change Activity					
<b>Assessment</b>  (ACT) Starting at her doorstep, Ramona walked down the sidewalk at 1.5 feet per second for 4 seconds. Then she stopped for 4 seconds, realizing that she had forgotten something. Next, she returned to her doorstep along the same route at 1.5 feet per second. The graph of Ramona's distance ( $d$ ) from her doorstep as a function of time ( $t$ ) would most resemble which of the following?  (a)                      (b)                      (c)                      *(d)                      (e)															

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										I	E	M		MM	
<b>District Objective</b> Find the distance between two points, a line and a point, and two lines.												<b>PASS Process Standard</b> I B II A		<b>Quarter</b> I <b>No. Days</b> 1/2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>III. Coordinate Geometry (Geometry)</b> B. Use coordinate geometry to find: 1. Distance between two points														<b>NCTM Standard</b> Pg. 294 Pgs. 310-313 Pgs. 354-359	
<b>Text Correlation</b> P.1, Pgs. 4-11								<b>Rating</b> 2		<b>Additional Resources</b> <a href="http://1rg.com/algebra/practice/question2.htm">http://1rg.com/algebra/practice/question2.htm</a>					
<b>Assessment</b>  1. (District) Find the distance between the points (3, 5) and (-2, -1).  2. (ACT) In the standard (x, y) coordinate plane, what is the distance between the points with coordinates (5, 4) and (-2, 2)?  (a) 3                      (b) $\sqrt{13}$ (c) $3\sqrt{5}$ (d) $\sqrt{53}$ (e) 9															

<b>Honors Math Analysis: Functions and Relations</b>																
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									I	E	M	MM				
<b>District Objective</b> Find the coordinates of the midpoint of a line segment.												<b>PASS Process Standard</b> IV B		<b>Quarter</b> I <b>No. Days</b> 1/2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP																
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pg. 294 Pgs. 313-314 Pgs. 334-341			
<b>III. Coordinate Geometry (Geometry)</b> B. Use coordinate geometry to find: 2. Midpoint of a segment																
<b>Text Correlation</b> P.1, Pg. 5								<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://1rg.com/algebra/practice/question2.htm">http://1rg.com/algebra/practice/question2.htm</a>						
<b>Assessment</b>  (ACT) One endpoint of a diameter of a circle with center $(2, -3)$ has coordinates $(4, -2)$ in the standard $(x, y)$ plane. What are the coordinates of the other endpoint of that diameter?  (a) $(2 + \sqrt{5}, -3 + \sqrt{5})$ (b) $(2 - \sqrt{5}, -3 - \sqrt{5})$ (c) $(0, -4)$ (d) $(1, -5)$ (e) $(6, -1)$																

<b>Honors Math Analysis: Functions and Relations</b>																
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										I	E	M				
<b>District Objective</b> Identify special characteristics of circles from their equation (e.g., the center of a circle).												<b>PASS Process Standard</b> V B, C		<b>Quarter I</b> <b>No. Days</b> 1/2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP																
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 300-303 Pgs. 348-359			
<b>II. Functions and Relations (Algebra II)</b> F. Identify, graph, and write the equations of the <b>conic sections</b> .																
<b>Text Correlation</b> P.1, Pg. 6								<b>Rating</b>		<b>Additional Resources</b> <a href="http://forum.Swarthmore.edu/sketchpad/ckcircleprint.html">http://forum.Swarthmore.edu/sketchpad/ckcircleprint.html</a>						
<b>Assessment</b>																
<p>1. (District) Find the standard form of the equation of the circle with center: <math>(-3, 4)</math> and radius: 6.</p> <p>2. (ACT) Which of the following is an equation of the circle in the standard <math>(x, y)</math> coordinate plane below?</p> <p style="text-align: center;">(a) <math>(x - 3)^2 + (y + 3)^2 = \sqrt{3}</math></p> <p style="text-align: center;">(b) <math>(x + 3)^2 + (y - 3)^2 = 6</math></p> <p style="text-align: center;">(c) <math>(x - 3)^2 + (y + 3)^2 = 6</math></p> <p style="text-align: center;">(d) <math>(x + 3)^2 + (y - 3)^2 = 9</math></p> <p style="text-align: center;">(e) <math>(x - 3)^2 + (y + 3)^2 = 9</math></p>																

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K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												M		MM	
<b>District Objective</b> *Use a graphing utility to graph a function and determine its domain, range, and intercepts.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> IV C, D V A		<b>Quarter</b> I <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 297-300 Pgs. 360-364		
<b>Text Correlation</b> P.2, Pgs. 12-23 P.4, Pgs. 41-54								<b>Rating</b> 1		<b>Additional Resources</b> Graphing Calculator; <a href="http://mathaid.com/products/Precalc/full/contents.html">http://mathaid.com/products/Precalc/full/contents.html</a>					
<b>Assessment</b>  1. (District) Use a graphing utility and the specified viewing rectangle to graph $y = 7 - x + 2x^3$ .  <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <math>X \text{ min} = -4</math>  <math>X \text{ max} = 4</math>  <math>X \text{ scl} = 1</math>  <math>Y \text{ min} = -2</math>  <math>Y \text{ max} = 14</math>  <math>Y \text{ scl} = 2</math> </div>  2. (District) Use a graphing utility to graph the equation: $y = x^3 - 4x^2 - 4x + 16$ . Use the graph to approximate any $x$ -intercepts of the graph. Verify your results algebraically.															

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									I	E	E	M				
<b>District Objective</b> *Write the equation of a line using the slope-intercept form and point-slope form of an equation.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> IV B V A		<b>Quarter I</b> <b>No. Days</b> 1/2		
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<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra I)</b> E. Write the equation of and graph linear relationships: 1. <b>slope</b> and <b>y-intercept</b> 2. <b>slope</b> and one point on the line 3. two points on the line 4. <b>x-intercept</b> and <b>y-intercept</b> 5. a set of data points													<b>NCTM Standard</b> Pgs. 300-303 Pgs. 354-364			
<b>Text Correlation</b> P.3, Pgs. 24-38								<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://www.ies.co.jp/math/java/index.html">http://www.ies.co.jp/math/java/index.html</a>						
<b>Assessment</b>  1. (ACT) Which of the following functions has the graph shown in the standard $(x, y)$ coordinate plane below? (a) $-4y + 2x = 0$ (b) $y = -4$ and $x = 2$ (c) $y = -4x + 2$ (d) $y = 2x + 4$ (e) $y = 2x - 4$  2. (District) Find an equation of the line that passes through $(8, 17)$ perpendicular to the line $x + 2y = 2$ .																

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									I		E	M		MM		
<b>District Objective</b> *Write expressions that require planning and/or manipulating to accurately model a situation.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A, B II A IV A, B, C, D		<b>Quarter I</b> <b>No. Days</b> 1/2		
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<b>PASS Objective</b> The student will... <b>I. Number Sense/Algebraic Operations (Algebra I)</b> A. Translate word phrases and sentences into <b>expressions</b> and equations and vice versa.														<b>NCTM Standard</b> Pgs. 300-303 Pgs. 348-364		
<b>Text Correlation</b> P.3, Pgs. 24-38								<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://math.uww.edu/~mcfarlat/141/line1.htm">http://math.uww.edu/~mcfarlat/141/line1.htm</a>						
<b>Assessment</b>  1. (ACT) If during 1 hour of a certain television program there are $x + y$ commercials, where $x$ of them are 30-second commercials and the rest are 1-minute commercials, which of the following expressions represents the number of minutes left for noncommercial programming during the hour?  (a) $60 - 2x - y$ (b) $60 - 30x - y$ (c) $60 - 30x - 60y$ *(d) $60 - \frac{1}{2}x - y$ (e) $60 - \frac{1}{30}x - \frac{1}{60}y$  2. (District) Find a linear equation giving the total cost, $c$ , of producing $x$ units given that 200 graphing calculators cost \$1050 to produce and 525 calculators cost \$2350 to produce.																

<b>Honors Math Analysis: Functions and Relations</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
									I	E	E	M		MM		
<b>District Objective</b> *Apply the concept of rate of change to write the equation of a linear function.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> III A V C		<b>Quarter</b> I <b>No. Days</b> 1		
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<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra I)</b> D. Find the <b>slope</b> of a line given: <ol style="list-style-type: none"> <li>1. the graph of the line</li> <li>2. an equation of the line</li> <li>3. two points on the line</li> <li>4. a set of data points</li> </ol>														<b>NCTM Standard</b> Pgs. 300-306 Pgs. 348-364		
<b>Text Correlation</b> P.3, Pgs. 24-38								<b>Rating</b> 1		<b>Additional Resources</b> The Rubber Band Stretch Activity; <a href="http://math.uww.edu/~mcfarlat/141/line1.htm">http://math.uww.edu/~mcfarlat/141/line1.htm</a> <a href="http://math.rice.edu/~lanius/Algebra/hottub.html">http://math.rice.edu/~lanius/Algebra/hottub.html</a>						
<b>Assessment</b>  (District) Find a linear equation giving the total cost, $c$ , of producing $x$ units given that 200 graphing calculators cost \$1050 to produce and 525 calculators cost \$2350 to produce.																

<b>Honors Math Analysis: Functions and Relations</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
											I	M				
<b>District Objective</b> *Solve and graph quadratic equations.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A, B V A		<b>Quarter</b> I <b>No. Days</b> 1		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP																
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 292-294 Pgs. 297-303 Pgs. 334-341 Pgs. 354-364				
<b>II. Functions and Relations (Algebra II)</b> C. Solve <b>quadratic equations</b> by: <ol style="list-style-type: none"> <li>1. graphing</li> <li>2. factoring</li> <li>3. completing the square</li> <li>4. <b>quadratic formula</b></li> </ol>																
<b>Text Correlation</b> P.4, Pgs. 39-50						<b>Rating</b> 3		<b>Additional Resources</b> Graphing Calculator; <a href="http://mathaid.com/products/Precalc/full/contents_.html">http://mathaid.com/products/Precalc/full/contents_.html</a>								
<b>Assessment</b>																
1. (ACT) The equation $10w^2 + 17w - 20 = 0$ has what types of numbers as its two solutions? <ol style="list-style-type: none"> <li>(a) Two negative real numbers</li> <li>* (b) One positive real number and one negative real number</li> <li>(c) Two positive real numbers</li> <li>(d) One negative real number and zero</li> <li>(e) One positive real number and zero</li> </ol> 2. (District) Solve: $(x-1)^2 = 3x+5$ <ol style="list-style-type: none"> <li>(a) 1, 4</li> <li>(b) <math>\frac{5 \pm \sqrt{39}}{2}</math></li> <li>(c) <math>\frac{5 \pm \sqrt{41}}{2}</math></li> <li>(d) -1, 6</li> <li>(e) None of these</li> </ol>																

<b>Honors Math Analysis: Functions and Relations</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
									I		E	M		MM		
<b>District Objective</b> *Determine the points of intersection for two or more functions.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A III A IV D		<b>Quarter I</b> <b>No. Days</b> 1/2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP																
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra I)</b> L. Solve a system of linear equations by: <ol style="list-style-type: none"> <li>1. graphing</li> <li>2. substitution</li> <li>3. elimination</li> </ol>														<b>NCTM Standard</b> Pg. 294 Pgs. 297-300 Pgs. 334-341 Pgs. 354-364		
<b>Text Correlation</b> P.4, Pgs. 44-54				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://www2.academic.com/AcademicOnline/imath/UseGrapher.html">http://www2.academic.com/AcademicOnline/imath/UseGrapher.html</a> <a href="http://147.4150.5/~matscw/RealWorld/index.html">http://147.4150.5/~matscw/RealWorld/index.html</a>										

**Assessment**

(District) Algebraically, find the point(s) of intersection of the graphs of

$$y = \frac{1}{4}x^2 - \frac{17}{4} \text{ and } y = \frac{1}{2}x - \frac{1}{2}.$$

- (a) (5, -3)
- \* (b) (5, 2), (-3, -2)
- (c) (2, - $\frac{1}{2}$ ), (-2, - $\frac{3}{2}$ )
- (d) No solution
- (e) None of these

**Honors Math Analysis: Functions and Relations**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	E		M	
<b>District Objective</b> *Solve, graph, and apply problems involving absolute value.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A, B		<b>Quarter I</b> <b>No. Days</b> 1	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 292-294 Pgs. 300-303 Pgs. 334-341 Pgs. 354-364			
<b>Text Correlation</b> P.4, Pg. 50 P.5, Pgs. 55-66								<b>Rating</b> 2		<b>Additional Resources</b> Graphing Calculator; Absolute Value Activity; <a href="http://www.exploremath.com/activities/index.cfm">http://www.exploremath.com/activities/index.cfm</a>					

### Assessment

1. (ACT) For all pairs of real numbers,  $a$  and  $b$ , which of the following expressions are equal?

- I.  $|a + b|$
- II.  $|a| + |b|$
- III.  $|-a - b|$

- (a) I and II only
- (b) I and III only
- (c) II and III only
- (d) I, II, and III
- (e) No pair of the expressions will always be equal.

2. (District) Use a graphing utility to graph  $y = |2x + 1| - 3$ .

## Honors Math Analysis: Functions and Relations

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M			
<b>District Objective</b> *Graph and analyze linear functions and inequalities.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> IV B, C		<b>Quarter</b> I <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> B. Solve, analyze, and graph linear equations, inequalities, and systems.													<b>NCTM Standard</b> Pgs. 297-303 Pgs. 354-364		
<b>Text Correlation</b> P.4, P.5, Pgs. 39-66								<b>Rating</b> 1		<b>Additional Resources</b> Graphing Calculator; <a href="http://www.exploremath.com/lessonplans/index.cfm">http://www.exploremath.com/lessonplans/index.cfm</a>					

**Assessment**

1. (ACT) The line  $y = \frac{2}{3}x + 2$  passes through which one of the following points?

- (a)  $F(-3, -2)$
- (b)  $G(0, 3)$
- (c)  $H(2, 3)$
- (d)  $J(3, 0)$
- (e)  $K(3, 4)$

2. (ACT) Which of the following inequalities is represented by the shaded region below?

- (a)  $y \leq x + 1$
- (b)  $y \geq x + 1$
- (c)  $x + y \geq 1$
- (d)  $x + y \leq 1$
- (e)  $y + 1 \leq x$

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											I	M			
<b>District Objective</b> *Solve and graph equations involving rational terms.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A, B V A		<b>Quarter I</b>  <b>No. Days</b> 1	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 292-294 Pgs. 297-303 Pgs. 334-341 Pgs. 354-364			

<b>Text Correlation</b> P.4, Pg. 49	<b>Rating</b> 1	<b>Additional Resources</b> Graphing Calculator; <a href="http://mathaid.com/products/PreCalc/full/contents_.html">http://mathaid.com/products/PreCalc/full/contents_.html</a>
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**Assessment**

(District) Solve for  $x$ :  $\frac{1}{x-1} + \frac{x}{x+2} = 2$

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									I	E	M	MM			
<b>District Objective</b> *Determine when an expression is undefined.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A, B V A		<b>Quarter I</b> <b>No. Days</b> 1/2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>I. Number Sense/Algebraic Operations (Algebra I)</b> C. Simplify and evaluate expressions including: 3. <b>rational</b>												<b>NCTM Standard</b> Pgs. 291-292 Pgs. 342-347			

<b>Text Correlation</b> P.5, Pg. 62	<b>Rating</b> 1	<b>Additional Resources</b> <a href="http://mathaid.com/products/PreCalc/full/contents_.html">http://mathaid.com/products/PreCalc/full/contents_.html</a>
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**Assessment**

1. (ACT) For which real values of  $x$  is  $\frac{2x}{3^{2x-3}}$  defined?

- (a) All real numbers      (b) All except 0      (c) All except  $\frac{2}{3}$   
 (d) All except  $\frac{3}{2}$       (e) All except  $-\frac{3}{2}$

2. (District) Find the domain of the function:  $f(x) = \frac{5}{x^2 - 2x}$

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											I	M			
<b>District Objective</b> Solve, graph and apply applications involving inequalities.												<b>PASS Process Standard</b> V A, B		<b>Quarter</b> I <b>No. Days</b> 1	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 292-294 Pgs. 297-303 Pgs. 334-341 Pgs. 354-364			

<b>Text Correlation</b> P.5, Pgs. 59-61, 66	<b>Rating</b> 2	<b>Additional Resources</b> <a href="http://www.exploremath.com/lessonplans/index.cfm">http://www.exploremath.com/lessonplans/index.cfm</a>
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**Assessment**

1. (ACT) Which of the following is a graph of the solution of the inequality

$$-x^2 + 5x - 6 < 0?$$

- (a) (b)  
(c) (d)  
(e)

2. (ACT) For what values of  $x$  is  $4x^2 + 5x - 6$  positive?

- (a)  $x < -\frac{1}{4}$  or  $x > 6$  (b)  $x < -\frac{3}{4}$  or  $x > 2$   
(c)  $x < -\frac{3}{2}$  or  $x > 1$  (d)  $x < -2$  or  $x > \frac{3}{4}$   
(e)  $x < -6$  or  $x > \frac{1}{4}$

**Honors Math Analysis: Trigonometric Functions,  
Equations and Applications**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I		M	
<b>District Objective</b> Determine the location of an arc on a unit circle..												<b>PASS Process Standard</b> I A II A V A		<b>Quarter</b> I <b>No. Days</b> 3	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															

<b>PASS Objective</b> The student will... <b>II. Properties of 2- and 3-Dimensional Figures (Geometry)</b> B. Use properties of 2- and 3-dimensional figures to determine unknown values (e.g., given the perimeter/circumference, find the area).	<b>NCTM Standard</b> Pgs. 313-314 Pgs. 348-364
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<b>Text Correlation</b> 4.1, Pgs. 311-321	<b>Rating</b> 2	<b>Additional Resources</b>
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<b>Assessment</b>  (District) Determine two coterminal angles (one positive and one negative) for the given angle. Give your answer in radians.  $-\frac{7\pi}{4} \quad -\frac{5\pi}{2} \quad \frac{11\pi}{6} \quad 7\pi$  (District) Sketch the angle in standard position.
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**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
							I			M		E		E	

<b>District Objective</b> Find the complement, supplement, and coterminal angle of a given arc/angle.	<b>PASS Process Standard</b> III A V A	<b>Quarter</b> I <b>No. Days</b> 1
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<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP
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<b>PASS Objective</b> The student will... <b>IV. Angles and Triangles</b> A. Solve problems using properties of angles (e.g., interior, exterior, complementary, vertical, angle sums, 30-60-90).	<b>NCTM Standard</b> Pgs. 310-313 Pgs. 334-341
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<b>Text Correlation</b> 4.1, Pgs. 310-321	<b>Rating</b> 1	<b>Additional Resources</b>
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<b>Assessment</b>  (District) Determine which of the following angles is complementary to $\theta = \frac{\pi}{12}$ .  (a) $\frac{5\pi}{12}$ (b) $\frac{11\pi}{12}$ (c) $\frac{13\pi}{12}$ (d) $\frac{25\pi}{12}$ (e) None of these
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**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
										I		M		MM	

<b>District Objective</b> Find the length of a circular arc.	<b>PASS Process Standard</b> I A, B II C	<b>Quarter</b> I <b>No. Days</b> 1
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<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP
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<b>PASS Objective</b> The student will... <b>II. Properties of 2- and 3-Dimensional Figures (Geometry)</b> B. Use properties of 2- and 3-dimensional figures to determine unknown values (e.g., given the perimeter/circumference, find the area).	<b>NCTM Standard</b> Pgs. 310-313
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<b>Text Correlation</b> 4.1, Pgs. 311-316	<b>Rating</b> 1	<b>Additional Resources</b> Scientific and/or graphing calculator; <a href="http://www.math.odu.edu/cbii/calcanim/main.html">http://www.math.odu.edu/cbii/calcanim/main.html</a>
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**Assessment**

(District) Find the arc length  $s$  in the figure shown below.

(a) 3.49"  
 (b) 37.22"  
 \*(c) 27.93"  
 (d) 17.41"

**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> Determine the relationship between radian and degree measures.	<b>PASS Process Standard</b> IV B V C	<b>Quarter</b> I <b>No. Days</b> 2
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ITBS  
  CRT  
  EXPLORE  
  EOI  
  PLAN  
  ACT  
  AP

<b>PASS Objective</b> The student will...	<b>NCTM Standard</b> Pgs. 310-313
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<b>Text Correlation</b> 4.1, Pgs. 311-321	<b>Rating</b> 1	<b>Additional Resources</b> Scientific and/or graphing calculator; <a href="http://id.mind.net/~zona/mmts/trigonometryRealms/radianDemo1/RadianDemo1.html">http://id.mind.net/~zona/mmts/trigonometryRealms/radianDemo1/RadianDemo1.html</a>
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<p><b>Assessment</b></p> <p>(District) A central angle <math>\theta</math> of a circle with radius 16 inches subtends an arc of 19.36 inches. Find <math>\theta</math>.</p> <p>(a) <math>47.3519^\circ</math>  (b) <math>1.21^\circ</math>  (c) <math>69.3279^\circ</math>  (d) <math>0.8264^\circ</math>  (e) None of these</p>
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**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<p><b>District Objective</b> *Use the unit circle to evaluate the circular function.</p> <p><i>*Critical to success in next course.</i></p>	<p><b>PASS Process Standard</b> IV B, D</p>	<p><b>Quarter</b> I <b>No. Days</b> 4</p>
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<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP
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<b>PASS Objective</b> The student will...	<b>NCTM Standard</b> Pgs. 310-313
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<b>Text Correlation</b> 4.2, Pgs. 322-330	<b>Rating</b> 1	<b>Additional Resources</b> The Wrapping Function Activity; Toss a Cube & Cement a Concept Activity; Trigonometry Toss Activity; Exploring the Unit Circle Activity; <a href="http://illuminations.nctm.org/lessonplans/9-12/trigdrills/index.html">http://illuminations.nctm.org/lessonplans/9-12/trigdrills/index.html</a>
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<b>Assessment</b>	
<p>1. (District) Find the point <math>(x, y)</math> on the unit circle that corresponds to the real number <math>t = -\frac{7\pi}{4}</math>.</p> <p>2. (ACT) If <math>\frac{\sin \theta}{\cos \theta} = \frac{\cos \theta}{\sin \theta}</math> and <math>0 \leq \theta \leq \frac{\pi}{2}</math>, what is the value of <math>\cos \theta</math>?</p> <p>(a) 1            (b) <math>\frac{\sqrt{2}}{2}</math>            (c) <math>\frac{\pi}{4}</math>            (d) <math>45^\circ</math> (e) No value of <math>\cos \theta</math> is consistent with these conditions.</p> <p>3. (ACT) The figure below shows 2 points, <math>P</math> and <math>Q</math>, on a unit circle. What is the distance, in coordinate units, from <math>P</math> to <math>Q</math>?</p> <p>(a) <math>\sqrt{(\cos \alpha - \cos \beta)^2 + (\sin \alpha - \sin \beta)^2}</math> (b) <math>\sqrt{2 + 2\cos \alpha \cos \beta + 2\sin \alpha \sin \beta}</math> (c) <math>2\sqrt{\cos \alpha \cos \beta + \sin \alpha \sin \beta}</math> (d) <math>2\sqrt{\cos \alpha \cos \beta - \sin \alpha \sin \beta}</math> (e) <math>2\cos \alpha \sin \beta</math></p>	

**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
										I		M		MM	

<b>District Objective</b> Identify the trigonometric ratio when all necessary side lengths of a right triangle are given.	<b>PASS Process Standard</b> I B III A, B	<b>Quarter</b> I <b>No. Days</b> 3
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ITBS    CRT    EXPLORE    EOI    PLAN    ACT    AP

<p><b>PASS Objective</b> The student will...</p> <p><b>IV. Angles and Triangles (Geometry)</b> C. Express the trigonometric functions as <b>ratios</b> and derive the relationship between <b>sine</b>, <b>cosine</b>, and <b>tangent ratios</b>, and use to solve real-world problems.</p>	<p><b>NCTM Standard</b> Pgs. 310-313</p>
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<p><b>Text Correlation</b> 4.3, Pgs. 331-342</p>	<p><b>Rating</b> 1</p>	<p><b>Additional Resources</b> <a href="http://illuminations.nctm.org/lessonplans/9-12/trigdrills/sheet2.html">http://illuminations.nctm.org/lessonplans/9-12/trigdrills/sheet2.html</a> <a href="http://illuminations.nctm.org/lessonplans/9-12/trigdrills/sheet3.html">http://illuminations.nctm.org/lessonplans/9-12/trigdrills/sheet3.html</a> <a href="http://id.mind.net/~zona/mmts/trigonometryRealms/trigonometryRealms.html">http://id.mind.net/~zona/mmts/trigonometryRealms/trigonometryRealms.html</a></p>
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**Assessment**

1. (ACT) In the figure below,  $\angle B$  is a right angle and other measures are marked.  
What is  $\tan x$ ?

(a)  $\frac{15}{8}$       \*(b)  $\frac{8}{15}$       (c)  $\frac{8}{17}$   
(d)  $\frac{15}{17}$       (e)  $\frac{17}{15}$

2. (District) Using the right triangle, find  $\cot\theta$ .

**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
										I		M		MM	

<p><b>District Objective</b> Apply the basic trigonometric ratios to solve right-triangle problems.</p>	<p><b>PASS Process Standard III A</b></p>	<p><b>Quarter I-II</b> <b>No. Days</b> 5</p>
<p><input type="radio"/> ITBS   <input type="radio"/> CRT   <input type="radio"/> EXPLORE   <input type="radio"/> EOI   <input type="radio"/> PLAN   <input checked="" type="radio"/> ACT   <input type="radio"/> AP</p>		

<p><b>PASS Objective</b> The student will...</p> <p><b>IV. Angles and Triangles (Geometry)</b> C. Express the trigonometric functions as <b>ratios</b> and derive the relationship between <b>sine</b>, <b>cosine</b>, and <b>tangent ratios</b>, and use to solve real-world problems.</p>	<p><b>NCTM Standard</b> Pgs. 310-313</p>
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<p><b>Text Correlation</b> 4.3, Pgs. 331-342 4.8, Pgs. 388-399</p>	<p><b>Rating</b> 1</p>	<p><b>Additional Resources</b> Scientific and/or graphing calculator; Rubber Band Shoot Activity <a href="http://phywww1.ncssm.edu/goebel/imp/index_f.html">http://phywww1.ncssm.edu/goebel/imp/index_f.html</a></p>
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<p><b>Assessment</b></p> <p>1. (ACT) From the time it takes a radar signal to bounce back from a plane, Air Traffic Control's radar can determine the distance, <math>d</math>, of the plane from the radar dish. The angle, <math>a^\circ</math>, that the plane makes with the horizontal, as shown below, can also be determined from the radar signal. From this information, a computer must determine the elevation of the plane above the level of the radar dish. Which of the following expressions gives the altitude?</p> <p>*(a) <math>d \sin a^\circ</math> (b) <math>d \cos a^\circ</math> (c) <math>d \tan a^\circ</math> (d) <math>d \cot a^\circ</math> (e) <math>d \sec a^\circ</math></p> <p>2. (District) A sea - to - air guided missile shot from a submarine breaks the water surface at an angle of elevation of <math>20.4^\circ</math> traveling at 520 feet per second. If the missile continues at a constant angle and at the same speed, how far above sea level will it be after 20 seconds ?</p>
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**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<p><b>District Objective</b> *Extend the definitions of circular functions to the trigonometric functions.  *Critical to success in next course.</p>	<p><b>PASS Process Standard</b> IV D</p>	<p><b>Quarter</b> I <b>No. Days</b> 3</p>
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<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...														<b>NCTM Standard</b> Pgs. 310-313	
<b>Text Correlation</b> 4.3, Pgs. 331-342 4.4, Pgs. 343-352				<b>Rating</b> 1		<b>Additional Resources</b> Trig Trainer; <a href="http://www.ies.co.jp/math/java/trig/index.html">http://www.ies.co.jp/math/java/trig/index.html</a> <a href="http://phywww1.ncssm.edu/goebel/imp/index_f.html">http://phywww1.ncssm.edu/goebel/imp/index_f.html</a>									
<b>Assessment</b>  (District) Find $\csc \theta$ for the angle $\theta$ shown below.															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
<b>District Objective</b> Use reference angles to find an angle in standard position.												<b>PASS Process Standard</b>		<b>Quarter</b> I <b>No. Days</b> 1	

○ ITBS ○ CRT ○ EXPLORE ○ EOI ○ PLAN ○ ACT ○ AP																
<b>PASS Objective</b> The student will...															<b>NCTM Standard</b> Pgs. 310-313	
<b>Text Correlation</b> 4.4, Pgs. 343-352					<b>Rating</b> 1		<b>Additional Resources</b>									
<b>Assessment</b>  (District) Find the reference angle $\theta'$ for $\theta = \frac{5\pi}{4}$ .																
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
												I/M		MM		
<b>District Objective</b> *Identify graphs of basic trigonometric functions.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> V A, B			<b>Quarter</b> I <b>No. Days</b> 3	



<b>District Objective</b> *Use the amplitude, period, and phase shift to graph the trigonometric functions.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I A V A			<b>Quarter II</b> <b>No. Days</b> 6		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 310-313		
<b>Text Correlation</b> 4.5, Pgs. 355-364 4.6, Pgs. 365-376					<b>Rating</b> 1		<b>Additional Resources</b> Sunrise/Sunset Activity; Float My Boat Activity; CBL Experiment: Modeling Trigonometric Functions; <a href="http://www.ies.co.jp/math/java/trig/index.html">http://www.ies.co.jp/math/java/trig/index.html</a> <a href="http://library.thinkquest.org/2647/algebra/squash.htm">http://library.thinkquest.org/2647/algebra/squash.htm</a>								
<b>Assessment</b>  (District) Sketch the graph: $f(x) = 4 \cos\left(2x + \frac{\pi}{3}\right)$  <i>ANSWER:</i>															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Evaluate and graph inverse trigonometric functions. <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I A, B V A			<b>Quarter II</b> <b>No. Days</b> 3		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 310-313					
<b>Text Correlation</b> 4.7, Pgs. 377-378			<b>Rating</b> 1		<b>Additional Resources</b> Discovering Inverses Activity <a href="http://wims.unice.fr/~wims/wims.cgi?session=NF77BF8FBC.2&amp;lang=en&amp;module=H6%2Fanalysis%2Fgraphinv.en">http://wims.unice.fr/~wims/wims.cgi?session=NF77BF8FBC.2&amp;lang=en&amp;module=H6%2Fanalysis%2Fgraphinv.en</a> <a href="http://math.usask.ca/~maclean/JavaPage.html">http://math.usask.ca/~maclean/JavaPage.html</a>										
<b>Assessment</b>															
1. (District) Evaluate: $\arccos\left(\frac{1}{2}\right)$															
(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$ (c) $-\frac{\pi}{3}$ *(d) $\frac{2\pi}{3}$ (e) None of these															
2. (District) Match the graph with the correct function.															
(a) $y = \arccos(x - 2)$															
(b) $y = \arcsin(x + 2)$															
*(c) $y = \arccos\left(\frac{x}{2}\right)$															
(d) $y = \arccos(2x)$															
(e) None of these															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
										I	E	M			

<b>District Objective</b> *Solve problems integrating multiple algebraic and/or geometric concepts. *Critical to success in next course.										<b>PASS Process Standard</b> III A IV B, D				<b>Quarter II</b> <b>No. Days</b> 1	
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ● ACT   ○ AP															
<b>PASS Objective</b> The student will... <b>I. Logical Reasoning (Geometry)</b> A. Deduce properties and relationships of figures from given assumptions and information. <b>II. Properties of 2-and 3-Dimensional Figures</b> B. Use properties of 2-and 3-dimensional figures to determine unknown values (e.g., given the perimeter/circumference, find the area). C. Compute length, perimeter/circumference, area, volume, and surface area of geometric objects with missing information and correctly identify the appropriate unit of measure of each. E. Find angle measures and arc measures related to circles. <b>III. Coordinate Geometry</b> B. Use coordinate geometry to find: 1. Distance between two points 2. Midpoint of a segment 3. Slopes of parallel, perpendicular, horizontal, and vertical lines <b>IV. Angles and Triangles</b> A. Collect data involving two variables and display on a <b>scatter plot</b> ; interpret results using a linear or quadratic model/equation and identify whether the model/equation is a curve of best fit for the data (e.g., given a <b>scatter plot</b> and several linear or quadratic equations, which one is the best fit?). B. Use data and statistical measures for a variety of purposes (e.g., formulate hypotheses, make predictions, test <b>conjectures</b> ). C. Determine the probability of an event involving “and”, “or”, or “not”.												<b>NCTM Standard</b> Pgs. 310-313			
<b>Text Correlation</b> 4.8, Pgs. 388-399				<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or graphing Calculator; Minutes of Daylight Activity									
<b>Assessment</b> 1. (District) The angle of depression from the top of one building to the foot of a building across the street is $63^\circ$ . The angle of the depression to the top of the same building is $33^\circ$ . The two buildings are 40 feet apart. What is the height of the shorter building?  2. (ACT) How many square feet is the area of the shaded triangle ? (a) 15   (b) 18   (c) 20   (d) 24   (e) 30															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Use trigonometric concepts and basic identities to solve problems.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> III B, C, D				<b>Quarter II</b> <b>No. Days</b> 6	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>IV. Angles and Triangles (Geometry)</b> C. Express the trigonometric functions as <b>ratios</b> and derive the relationship between <b>sine</b> , <b>cosine</b> , and <b>tangent ratios</b> , and use to solve real-world problems.												<b>NCTM Standard</b> Pgs. 310-313			
<b>Text Correlation</b> 5.1, 5.2, Pgs. 408-422				<b>Rating</b> 1		<b>Additional Resources</b> Trigonometry Card Game Activity									
<b>Assessment</b>  1. (ACT) Which of the following is equivalent to $\frac{1 - \cos^2 \theta}{\cos^2 \theta}$ ?  (a) $\sec^2 \theta$ (b) $(\csc^2 \theta) - 1$ *(c) $\tan^2 \theta$ (d) $\sin^2 \theta$ (e) $-\frac{1}{\sin^2 \theta}$  2. (District) Verify the identity and confirm it graphically: $\sin x + \frac{\cos^2 x}{\sin x} = \csc x$															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Solve trigonometric equations.  <i>*Critical to success in next course.</i>	<b>PASS Process Standard</b> I B III A	<b>Quarter II</b> <b>No. Days</b> 4
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○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP

<b>PASS Objective</b> The student will...	<b>NCTM Standard</b> Pgs. 310-313
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<b>Text Correlation</b> 5.3, Pgs. 423-434	<b>Rating</b> 1	<b>Additional Resources</b> <a href="http://mathaid.com/products/Trigonometry/full/contents_html">http://mathaid.com/products/Trigonometry/full/contents_html</a>
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**Assessment**

(District) Find all solutions in the interval  $[0, 2\pi)$   $3 \sin^2 \theta - 8 = 0$

(a)  $\frac{\pi}{2}, \frac{3\pi}{2}$       (b)  $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$       (c)  $\pi$       (d) 0      (e) None of these

**Honors Math Analysis: Trigonometric Functions, Equations and Applications**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Use the sum and difference identities to evaluate the sine, cosine, and tangent functions.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> III B, C, D				<b>Quarter II</b> <b>No. Days</b> 4	
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 310-313					
<b>Text Correlation</b> 5.4, Pgs. 435-442				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://www.ies.co.jp/math/java/trig/index.html">http://www.ies.co.jp/math/java/trig/index.html</a>									
<b>Assessment</b>  (District) Find the exact value: $\frac{\tan 325^\circ - \tan 25^\circ}{1 + \tan 325^\circ \tan 25^\circ}$															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Use the double angle identities to evaluate sine, cosine, and tangent functions.  <i>*Critical to success in next course.</i>		<b>PASS Process Standard</b> III B, C, D	<b>Quarter II</b> <b>No. Days</b> 4
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP			
<b>PASS Objective</b> The student will...			<b>NCTM Standard</b> Pgs. 310-313
<b>Text Correlation</b> 5.5, Pgs. 443-456	<b>Rating</b> 1	<b>Additional Resources</b> <a href="http://mathaid.com/products/Trigonometry/full/contents_.htm">http://mathaid.com/products/Trigonometry/full/contents_.htm</a> <u>1</u>	
<b>Assessment</b>  (District) Given $\cos \theta = -\frac{7}{9}$ and $\tan \theta < 0$ , find $\sin 2\theta$ .  (a) $-\frac{14}{9}$ (b) $-\frac{56\sqrt{2}}{81}$ (c) $-\frac{32}{81}$ (d) $\frac{49}{81}$ (e) None of these			

<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Use the law of sines to solve a triangle.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I A, B V A			<b>Quarter II</b> <b>No. Days</b> 2		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b>			
<b>Text Correlation</b> 6.1, Pgs. 460-468				<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or graphing calculator; <a href="http://www.univie.ac.at/future.media/moe/galerie/galerie.htm">http://www.univie.ac.at/future.media/moe/galerie/galerie.htm</a> 1									
<b>Assessment</b>  (District) Given triangle with $A = 61^\circ$ , $B = 49^\circ$ , and $c = 5396$ , find $a$ .															
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal

												I/M		MM		
<b>District Objective</b> Find the area of a triangle.											<b>PASS Process Standard</b> I A, B II C		<b>Quarter II</b> <b>No. Days</b> 1			
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP																
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b>			
<b>Text Correlation</b> 6.1, Pgs. 464-468 6.2, Pgs. 472-476				<b>Rating</b> 2		<b>Additional Resources</b> Measuring Activity; <a href="http://jwilson.coe.ugs.edu/emt725/Heron/Heron.html">http://jwilson.coe.ugs.edu/emt725/Heron/Heron.html</a> <a href="http://www.acts.tinet.ie/areaoftriangle_673.html">http://www.acts.tinet.ie/areaoftriangle_673.html</a>										
<b>Assessment</b>  (District) Given a triangle with $A = 37^\circ$ , $B = 78^\circ$ , and $c = 250$ , find the area.																
<b>Honors Math Analysis: Trigonometric Functions, Equations and Applications</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	

												I/M		MM	
<b>District Objective</b> *Use the law of cosines to solve a triangle.  *Critical to success in next course.												<b>PASS Process Standard</b> I A, B III A		<b>Quarter II</b> <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b>			
<b>Text Correlation</b> 6.2, Pgs. 469-476				<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or graphing calculator; <a href="http://mathaid.com/products/Trigonometry/full/contents_.htm">http://mathaid.com/products/Trigonometry/full/contents_.htm</a> 1									
<b>Assessment</b>  (District) Given the triangle to the right, find $B$ .															

<b>Honors Math Analysis: Vectors</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> Add and subtract vectors geometrically.										<b>PASS Process Standard</b> I B IV A			<b>Quarter III</b> <b>No. Days</b> 1		
○ ITBS ○ CRT ○ EXPLORE ○ EOI ○ PLAN ○ ACT ○ AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 292-294					
<b>Text Correlation</b> 6.3, Pgs. 479-480, 517				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://www.ies.co.jp/math/java/trig/index.html">http://www.ies.co.jp/math/java/trig/index.html</a> <a href="http://integrate.cccoe.k12.ca.us/javamath/precalc/vector.htm">http://integrate.cccoe.k12.ca.us/javamath/precalc/vector.htm</a>									
<b>Assessment</b>  (District) In the following exercises, use the figure to sketch a graph of the specified vector.  1. $-v$ 2. $3v$ 3. $u+v$ 4. $u+2v$ 5. $u-v$ 6. $v-\frac{1}{2}u$															
<b>Honors Math Analysis: Vectors</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> Represent vectors using ordered pairs or ordered triples.	<b>PASS Process Standard</b> I A, B	<b>Quarter III</b> <b>No. Days</b> 1
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP		
<b>PASS Objective</b> The student will...		<b>NCTM Standard</b> Pgs. 292-294

<b>Text Correlation</b> 6.3, Pg. 478 11.3, Pg. 837	<b>Rating</b> 1	<b>Additional Resources</b> Graphics Calculators; <a href="http://mathaid.com/products/Trigonometry/full/contents_.htm">http://mathaid.com/products/Trigonometry/full/contents_.htm</a> <u>1</u>
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<b>Assessment</b>															
1. (District) A vector $v$ has initial point $(3, 7)$ and terminal point $(3, -2)$ . Find its component form.															
(a) $\langle 0, 9 \rangle$ (b) $\langle 9, 0 \rangle$ *(c) $\langle 0, -9 \rangle$ (d) $\langle -9, 0 \rangle$ (e) None of these															
2. (District) Write the component form of $v$ with initial point $(3, -2, 1)$ and terminal point $(-3, 6, -7)$ .															
(a) $v = \langle 0, 2, -3 \rangle$ (b) $v = \langle 6, -8, 8 \rangle$ (c) $v = \langle 0, 4, -6 \rangle$															
*(d) $v = \langle -6, 8, -8 \rangle$ (e) None of these															

**Honors Math Analysis: Vectors**

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Add, subtract, multiply, and find the magnitude of vectors algebraically. <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I B IV A, B				<b>Quarter III</b> <b>No. Days</b> 1	
○ ITBS ○ CRT ○ EXPLORE ○ EOI ○ PLAN ○ ACT ○ AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 292-294			
<b>Text Correlation</b> 6.3, Pgs. 479-481 11.3, Pg. 837					<b>Rating</b> 2 1		<b>Additional Resources</b> <a href="http://mathaid.com/products/Trigonometry/full/contents_.htm">http://mathaid.com/products/Trigonometry/full/contents_.htm</a> <u>1</u>								
<b>Assessment</b>  1. (District) A vector $v$ has initial point $(2, 5)$ and terminal point $(-1, 9)$ . Find its magnitude and direction.  2. (District) Given $\mathbf{u} = \langle 3, 2, 1 \rangle$ and $\mathbf{v} = \langle 7, -1, 2 \rangle$ find vector $\mathbf{z}$ where $\mathbf{z} = 2\mathbf{u} - \mathbf{v}$ . (a) $\mathbf{z} = \langle -1, 3, -1 \rangle$ * (b) $\mathbf{z} = \langle -1, 5, 0 \rangle$ (c) $\mathbf{z} = \langle -4, 3, -1 \rangle$ (d) $\mathbf{z} = \langle 13, 3, 4 \rangle$ (e) None of these															
<b>Honors Math Analysis: Vectors</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Solve problems using vectors and right triangle trigonometry.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I A, B IV A, B				<b>Quarter III</b> <b>No. Days</b> 1		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP																
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 291-294 Pgs. 310-313			
<b>Text Correlation</b> 6.3, Pgs. 484-490					<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://glenbrook.k12.il.us/gbssci/phs/Class/vectors/u311f.html">http://glenbrook.k12.il.us/gbssci/phs/Class/vectors/u311f.html</a>									
<b>Assessment</b>  (District) Two forces, one of 45 pounds and the other of 52 pounds, act on the same object. The angle between these forces is $25^\circ$ . Find the magnitude of the resultant force.																
<b>Honors Math Analysis: Vectors</b>																
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal	
												I/M		MM		

<b>District Objective</b> Find the inner/dot and cross products of vectors.	<b>PASS Process Standard</b> V A, B	<b>Quarter III</b> <b>No. Days</b> 2
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP		
<b>PASS Objective</b> The student will...		<b>NCTM Standard</b> Pgs. 291-294 Pgs. 313-314

<b>Text Correlation</b> 6.4, Pgs. 491-492 11.2, Pg. 838 11.3, Pgs. 846-847	<b>Rating</b> 1	<b>Additional Resources</b> <a href="http://www.phy/syr.edu/courses/Java-suite/crosspro.html">http://www.phy/syr.edu/courses/Java-suite/crosspro.html</a>
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<p><b>Assessment</b></p> <p>1. (District) Given <math>\mathbf{v} = 5\mathbf{i} - 2\mathbf{j}</math> and <math>\mathbf{w} = -3\mathbf{i} + \mathbf{j}</math>, find <math>\mathbf{v} \cdot \mathbf{w}</math>.</p> <p>2. (District) Let <math>\mathbf{u} = 3\mathbf{i} - \mathbf{j} - 2\mathbf{k}</math>, <math>\mathbf{v} = -2\mathbf{i} - 3\mathbf{j} + 2\mathbf{k}</math>, and <math>\mathbf{w} = \mathbf{i} + 2\mathbf{k}</math>, Calculate <math>\mathbf{u} \times \mathbf{v}</math>.</p> <p>(a) <math>\langle 4, 10, -11 \rangle</math>                      *(b) <math>\langle -8, -2, -11 \rangle</math>                      (c) <math>-7</math>  (d) <math>\langle -4, -10, 11 \rangle</math>                      (e) None of these</p>
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**Honors Math Analysis: Vectors**

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
												I/M		MM	

<b>District Objective</b> Determine whether two vectors are perpendicular.										<b>PASS Process Standard</b> I B III B, C			<b>Quarter III</b> <b>No. Days</b> 1/2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 291-294					
<b>Text Correlation</b> 6.4, Pg. 494			<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://magnus.poly.edu/~mleung/java/vectors/dproduct/dproduct.html">http://magnus.poly.edu/~mleung/java/vectors/dproduct/dproduct.html</a>										
<b>Assessment</b>  (District) Determine if the vectors $\mathbf{v} = 3\mathbf{i} - 7\mathbf{j}$ and $\mathbf{w} = -2\mathbf{i} + \frac{14}{3}\mathbf{j}$ are orthogonal, parallel or neither.															
<b>Honors Math Analysis: Polar Coordinates and Complex Numbers</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal





<b>District Objective</b> *Use interval, set, and function notation to specify the domain and range of a function/relation.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> II A, C				<b>Quarter III</b> <b>No. Days</b> 3	
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ● AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra I)</b> A. Define and distinguish between <b>relations</b> and <b>functions</b> , <b>dependent</b> and <b>independent</b> variables, and <b>domain</b> and <b>range</b> using <b>function</b> notation.										<b>NCTM Standard</b> Pgs. 296-303 Pgs. 360-364					
<b>Text Correlation</b> 1.1, Pgs. 84-96 1.2, Pgs. 97-108 and throughout				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://coolmath.com/func1.htm">http://coolmath.com/func1.htm</a> <a href="http://quia.com/mc/33138.html">http://quia.com/mc/33138.html</a>									
<b>Assessment</b>  1. (District) If $f(x) = x^2 - 2x$ , find $\frac{f(x+2) - f(2)}{x}$ , $x \neq 0$ .  2. (District) Find all solutions in the interval $[0, 2\pi)$ : $2\sin^2 x = \sin x$  3. (District) Find the domain of the function: $f(x) = \frac{4}{x^2 - 4}$  4. (District) Find the range of the function shown below:  5. (District) Graph the following piece-wise function. $f(x) = \begin{cases} x^2 + 2, & x \leq 1 \\ 2x^2 + 2, & x > 1 \end{cases}$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
									I	E	E	M		MM	



<b>District Objective</b> *Classify a function as even or odd.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I B V A			<b>Quarter III</b> <b>No. Days</b> 1/2		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ● AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 296-303			
<b>Text Correlation</b> 1.2, Pgs. 103-108					<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://library.thinkquest.org/2647/algebra/functype.htm">http://library.thinkquest.org/2647/algebra/functype.htm</a>								
<b>Assessment</b>  (District) Is the following function even or odd? $f(x) = 2x^3 - 3x + 7$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	

<b>District Objective</b> *Determine the critical values of a function.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> II B				<b>Quarter</b> III <b>No. Days</b> 1	
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ● AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> E. Find or interpret the maximum and minimum value and the <b>y-intercept</b> of a <b>quadratic</b> function.												<b>NCTM Standard</b> Pgs. 296-300			
<b>Text Correlation</b> 1.2, Pgs. 100-108			<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://www2.academic.com/AcademicOnline/imath/UseGrapher.html">http://www2.academic.com/AcademicOnline/imath/UseGrapher.html</a>										
<b>Assessment</b>  (District) The perimeter of a rectangle is 36 feet. Use a graphing utility to approximate the dimensions of the rectangle that yields a maximum area.  (a) 6 ft × 6 ft                      *(b) 9 ft × 9 ft                      (c) 18 ft × 3 ft (d) 18 ft × 9 ft                      (e) None of these															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	

<b>District Objective</b> *Determine relative (local) and absolute (global) extrema on an interval.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> II B			<b>Quarter</b> III <b>No. Days</b> 1		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 296-300					
<b>Text Correlation</b> 1.2, Pgs. 100-108			<b>Rating</b> 2		<b>Additional Resources</b> Graphics Calculator; <a href="http://www2.academic.com/AcademicOnline/imath/UseGrapher.html">http://www2.academic.com/AcademicOnline/imath/UseGrapher.html</a>										
<b>Assessment</b>  (District) Use a graphing utility to approximate any relative minimum or relative maximum of $f(x) = -2x^2 + x - 3$ .  (a) Relative maximum at $x = 0.24, y = -2.88$ (b) Relative minimum at $x = 0.22, y = -3.12$ (c) Relative maximum at $x = 0, y = -3$ (d) Relative minimum at $x = 0, y = -3$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
									I	E	E	M		MM	

<b>District Objective</b> *Determine the increasing and decreasing intervals of a function.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> II B			<b>Quarter</b> III <b>No. Days</b> 1/2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 296-300					
<b>Text Correlation</b> 1.2, Pgs. 99-108				<b>Rating</b> 1		<b>Additional Resources</b> Take a Hike on a Line Activity; Graphics Calculator; <a href="http://wims.unice.fr/~wims/wims.cgi?lang=en&amp;session=NF77BF8FBC.1&amp;module=home&amp;list=1#list1">http://wims.unice.fr/~wims/wims.cgi?lang=en&amp;session=NF77BF8FBC.1&amp;module=home&amp;list=1#list1</a>									
<b>Assessment</b>  (District) Determine the open intervals in which the function is increasing, decreasing, or constant.  (a) Increasing on $-\infty, \infty$ (b) Increasing on $-\infty, 0$ Decreasing on $0, \infty$ (c) Increasing on $-\infty, -2$ Decreasing on $2, \infty$ (d) Increasing on $-\infty, 3$ Decreasing on $3, \infty$ (e) None of these															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
									I	E	E	M		MM	

<b>District Objective</b> *Apply transformation skills to families of functions. <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I A V B				<b>Quarter III</b> <b>No. Days</b> 4	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra I)</b> B. Recognize the parent graph of the functions $y = k$ , $y = x$ , $y =  x $ , and predict the effects of <b>transformations</b> on the parent graph (e.g., $y =  x  + 2$ , change <b>slope</b> , change <b>intercepts</b> , change <b>slope</b> and <b>intercept</b> ). <b>II. Functions and Relations (Algebra II)</b> A. Recognize the parent graph of the function $y = x^2$ and predict the effects of transformations on the parent graph (e.g., $y = x^2 + 3$ shifts the graph up 3, $y = 3x^2$ creates vertical stretching by a factor of 3). <b>III. Coordinate Geometry (Geometry)</b> A. Use transformations (reflection, rotation, translation) within coordinate geometry (e.g., reflect points across the $y$ -axis).												<b>NCTM Standard</b> Pgs. 314-315			
<b>Text Correlation</b> 1.3, Pgs. 109-118				<b>Rating</b> 1		<b>Additional Resources</b> “Graph Races” Overhead Activity; Functions: A Swinging Time Activity; Graphics Calculator; <a href="http://math.rice.edu/~lanius/misc/hando.html">http://math.rice.edu/~lanius/misc/hando.html</a>									
<b>Assessment</b>  (District) Which sequence of transformations will yield the graph of $g(x) = - x + 9 $ from the graph of $f(x) =  x $ ?															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
											I	M		MM	

<b>District Objective</b> *Identify characteristics of graphs based on a general equation such as $y = ax^2 + c$ or on a set of conditions.										<b>PASS Process Standard</b> I B III C				<b>Quarter III</b> <b>No. Days</b> 2	
*Critical to success in next course.															
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ● ACT   ○ AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> A. Recognize the parent graph of the <b>function</b> $y = x^2$ and predict the effects of <b>transformations</b> on the parent graph (e. g., $y = x^2 + 3$ shifts the graph up 3, $y = 3x^2$ creates vertical stretching by a factor of 3).												<b>NCTM Standard</b> Pgs. 314-315			
<b>Text Correlation</b> 1.3, Pgs. 109-118				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://integretechpub.com/examples/interactive/index.html">http://integretechpub.com/examples/interactive/index.html</a>									
<b>Assessment</b>  1. (ACT) The equation $y = P(x)$ is graphed in the standard $(x, y)$ coordinate plane. If $P(x)$ is a 5th degree polynomial, which of the following CANNOT be the number of times the graph intersects (touches or crosses) the $x$ -axis?  *(a) 0                      (b) 1                      (c) 2                      (d) 3                      (e) 5  2. (ACT) The two parabolas $y = ax^2 + n$ and $y = x^2 + q$ have the same vertex when graphed in the $(x, y)$ coordinate plane. Which of the following must be true?  (a) $n + q = 0$ (b) $nq = a$ (c) $nq = 1$ (d) $a = 1$ (e) $n = q$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	

<b>District Objective</b> *Apply algebra and arithmetic operations to the composition of functions.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> III B				<b>Quarter</b> III <b>No. Days</b> 4	
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ● AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 297-303					
<b>Text Correlation</b> 1.4, Pgs. 119-130				<b>Rating</b> 1		<b>Additional Resources</b> M & M Composition Activity; Graphics Calculator; <a href="http://library.thinkquest.org/2647/algebra/functype.htm">http://library.thinkquest.org/2647/algebra/functype.htm</a>									
<b>Assessment</b>															
1. (District) Given $f(x) = \frac{1}{x}$ and $g(x) = \frac{x}{4}$ , find $(f/g)(x)$ .															
2. (District) If $f(x) = \sqrt{x}$ and $g(x) = \sqrt{4-x^2}$ , find the following :															
(a) $f + g$ (b) $f - g$ (c) $fg$ (d) $f / g$															
3. (District) If $f(x) = x^2 + 2x + 4$ and $g(x) = -x^2$ , show the following graphically:															
(a) $f + g$ (b) $f - g$ (c) $fg$ (d) $f / g$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	

<b>District Objective</b> *Find the inverse of a function.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> V B			<b>Quarter</b> III <b>No. Days</b> 2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> I. Find the inverse of a <b>function</b> and graph.												<b>NCTM Standard</b> Pgs. 297-303			
<b>Text Correlation</b> 1.5, Pgs. 131-137					<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://archives.math.utk.edu/visual.calculus/0/inverse.5/">http://archives.math.utk.edu/visual.calculus/0/inverse.5/</a>								
<b>Assessment</b>  (District) Given $f(x) = 3x + 5$ , find $f^{-1}(x)$ if it exists.															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	

<b>District Objective</b> Establish the existence of an inverse function by determining if the function is one-to-one.		<b>PASS Process Standard</b> II A IV A	<b>Quarter</b> III <b>No. Days</b> 1/2
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ● AP			
<b>PASS Objective</b> The student will...			<b>NCTM Standard</b> Pgs. 297-303
<b>Text Correlation</b> 1.5, Pgs. 135-141	<b>Rating</b> 1	<b>Additional Resources</b> <a href="http://www.sosmath.com/algebra/invfunc/fnc1.html">http://www.sosmath.com/algebra/invfunc/fnc1.html</a> <a href="http://www.purplemath.com/modules/invrscfn.htm">http://www.purplemath.com/modules/invrscfn.htm</a>	

**Assessment**

(District) Determine which function is one - to - one.

(a)  $y = |2 - x|$

(b)  $y = x^2 + 2$

(c)  $y = \sqrt{2 - x^2}$

\*(d)  $y = \frac{1}{x + 2}$

(e) None of these

**Honors Math Analysis: Functions**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M			

<b>District Objective</b> Describe special characteristics of parabolas from their equation (e.g., the vertex of a parabola).										<b>PASS Process Standard</b> I B II C			<b>Quarter IV</b> <b>No. Days</b> 1		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ● ACT   ○ AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> E. Find or interpret the maximum and minimum value and the <b>y-intercept</b> of a <b>quadratic</b> equation.										<b>NCTM Standard</b> Pgs. 297-303					
<b>Text Correlation</b> 2.1, Pgs. 158-168		<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://forum.swarthmore.edu/key/nucalc/parabola">http://forum.swarthmore.edu/key/nucalc/parabola</a> <a href="http://www.ies.co.jp/math/java/conics/focus/focus.html">http://www.ies.co.jp/math/java/conics/focus/focus.html</a> <a href="http://www.ies.co.jp/math/java/conics/draw_parabola/draw_parabola.html">http://www.ies.co.jp/math/java/conics/draw_parabola/draw_parabola.html</a>											
<b>Assessment</b>  (ACT) A parabola with an equation of the form $y = ax^2 + bx + c$ has the point (3, 1) as its vertex. If (1, 3) also lies on this parabola, which of the following is another point on the parabola?  (a) (-3, -1)   (b) (-1, -3)   (c) (2, 2)   (d) (2, 6)   (e) (5, 3)															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
									I		E	M		MM	

<b>District Objective</b> *Find the zeros of a polynomial function of higher degree.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I B V A			<b>Quarter IV</b> <b>No. Days</b> 2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra I)</b> I. Solve linear equations by graphing or using properties of equality. <b>II. Functions and Relations (Algebra II)</b> B. Solve, analyze, and graph linear equations, inequalities, and systems.										<b>NCTM Standard</b> Pgs. 297-300					
<b>Text Correlation</b> 2.2, Pgs. 173-180			<b>Rating</b> 1		<b>Additional Resources</b> Take a Hike on a Parabola Activity; Graphics Calculator; <a href="http://www.exploremath.com/activities/Activities_page.cfm?ActivityID=12">http://www.exploremath.com/activities/Activities_page.cfm?ActivityID=12</a>										
<b>Assessment</b>  (District) Find all of the zeros of the function: $f(x) = x^4 - 5x^3 + 8x^2 - 20x + 16$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal

											M		MM		
<b>District Objective</b> Use the Remainder and Factor Theorems to find the factors of a polynomial equation.											<b>PASS Process Standard</b> I B IV D		<b>Quarter IV</b> <b>No. Days</b> 2		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP															
<b>PASS Objective</b> The student will...											<b>NCTM Standard</b> Pgs. 297-300				
<b>Text Correlation</b> 2.3, Pgs. 181-194				<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://mathaid.com/products/Precalc/full/contents_.html">http://mathaid.com/products/Precalc/full/contents_.html</a>									
<b>Assessment</b>															
1. (District) Write as a product of linear factors: $f(x) = x^4 - 6x^3 - 4x^2 + 40x + 32$ .															
*(a) $(x-4)(x+2)(x+2+\sqrt{8})(x+2-\sqrt{8})$															
(b) $(x+4)(x-2)(x-2+\sqrt{8})(x-2-\sqrt{8})$															
(c) $(x-4)(x-2)(x-2+\sqrt{8})(x-2-\sqrt{8})$															
(d) $(x+4)(x+2)(x+2+\sqrt{8})(x+2-\sqrt{8})$															
(e) None of these															
2. (District) Use synthetic division to find $f(-2)$ : $f(x) = 4x^3 + 3x + 10$ .															
(a) 20      (b) -20      (c) 36      *(d) -28      (e) None of these															
3. (District) Divide: $(6x^4 - 4x^3 + x^2 + 10x - 1) \div (3x + 1)$ using long division.															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal

												M		MM		
<b>District Objective</b> Use the Rational Root Theorem to identify possible roots of a polynomial equation.											<b>PASS Process Standard</b> II B, C			<b>Quarter IV</b> <b>No. Days</b> 1		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP																
<b>PASS Objective</b> The student will...											<b>NCTM Standard</b> Pgs. 297-300					
<b>Text Correlation</b> 2.3, Pgs. 187-188				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://mathai.com/products/Precalc/full/contents_.html">http://mathai.com/products/Precalc/full/contents_.html</a>										
<b>Assessment</b>  (District) List the possible rational zeros of $f$ . Then use a graphing utility to graph $f$ so that some of the possible zeros can be eliminated. Then determine all the real zeros of $f$ .  $f(x) = 15x^3 - 26x^2 + 13x - 2$																
<b>Honors Math Analysis: Functions</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	

												M		MM	
<b>District Objective</b> *Use the Fundamental Theorem of Algebra to determine the roots of a polynomial equation.  <i>*Critical to success in next course.</i>											<b>PASS Process Standard</b> V A, B			<b>Quarter IV</b> <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...											<b>NCTM Standard</b> Pgs. 297-300				
<b>Text Correlation</b> 2.5, Pgs. 204-209				<b>Rating</b> 1		<b>Additional Resources</b> <a href="http://mathaid.com/products/Precalc/full/contents_.html">http://mathaid.com/products/Precalc/full/contents_.html</a>									
<b>Assessment</b>  (District) Find all of the zeros of the function: $f(x) = 3x^4 - 7x^3 + 21x^2 - 63x - 54.$															
<b>Honors Math Analysis: Functions</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal

											M		MM	
<b>District Objective</b> *Analyze and graph rational functions.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> V A		<b>Quarter IV</b> <b>No. Days</b> 5		
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ○ AP														
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 297-300		
<b>Text Correlation</b> 2.6, 2.7, Pgs. 212-230			<b>Rating</b> 1		<b>Additional Resources</b> Studying Functions using the Rule of Four Activity; Rational Function Models Activity; Graphics Calculator; <a href="http://www.univie.ac.at/future.media/moe/galerie/fun2/fun2.html">http://www.univie.ac.at/future.media/moe/galerie/fun2/fun2.html</a> <a href="http://id.mind.net/~zona/mmts/functionInstitute/functionInstitute.html">http://id.mind.net/~zona/mmts/functionInstitute/functionInstitute.html</a>									
<b>Assessment</b>														
1. (District) Find the domain: $f(x) = \frac{x}{x^2 + 3x - 4}$ .														
2. (District) Find the horizontal asymptote(s): $f(x) = \frac{3x^2 + 2x - 16}{x^2 - 7}$ .														
<b>Honors Math Analysis: Exponential and Logarithmic Functions</b>														

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal														
												M		MM															
<b>District Objective</b> Evaluate and simplify expressions containing rational exponents.												<b>PASS Process Standard</b> I B III A IV B		<b>Quarter IV</b> <b>No. Days</b> 1/2															
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP																													
<b>PASS Objective</b> The student will...														<b>NCTM Standard</b> Pgs. 291-294															
<b>Text Correlation</b> 3.1, Pgs. 238-251								<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or Graphics Calculator; <a href="http://ucsub.colorado.edu/~maybin/mtop/ms06/exp.html">http://ucsub.colorado.edu/~maybin/mtop/ms06/exp.html</a> <a href="http://www.mathnotes.com/intermediate/aw_interchap7.html">Http://www.mathnotes.com/intermediate/aw_interchap7.html</a>																			
<b>Assessment</b>  1. (District) A certain population grows according to the equation $y = 40e^{0.025t}$ . Find the initial population and the population (to the nearest integer) when $t = 50$ .  2. The table shows the amount $A(t)$ in grams of a radioactive element present after $t$ days. Suppose that $A(t)$ decays exponentially. <table border="1" style="margin: 10px auto;"> <tr> <td>t (days)</td> <td>0</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>A(t)</td> <td>320</td> <td>226</td> <td>160</td> <td>115</td> <td>80</td> <td>57</td> </tr> </table> (a) What is the initial population? (b) What is the half life of the element? (c) Approximately how much will be present after 16 days? (d) Find an equation for $A(t)$ .																t (days)	0	2	4	6	8	10	A(t)	320	226	160	115	80	57
t (days)	0	2	4	6	8	10																							
A(t)	320	226	160	115	80	57																							
<b>Honors Math Analysis: Exponential and Logarithmic Functions</b>																													

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
												M		MM		
<b>District Objective</b> Evaluate expressions with irrational exponents.												<b>PASS Process Standard</b> IA III B IV B	<b>Quarter IV</b> <b>No. Days</b> 1/2			
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP																
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 291-292 Pg. 294 Pgs. 297-300			
<b>Text Correlation</b> 3.1, Pg. 238-251								<b>Rating</b> 1	<b>Additional Resources</b> Scientific and/or Graphics Calculator; <a href="http://www.mathnotes.com/intermediate/aw_interchap7.html">http://www.mathnotes.com/intermediate/aw_interchap7.html</a>							
<b>Assessment</b>  (District) Evaluate: $5.1032g^{\sqrt{2}}$ . Round your answer to 2 decimal places.  (a) 14.83      (b) 27.69      (c) 9.52      *(d) 7.55      (e) None of these																
<b>Honors Math Analysis: Exponential and Logarithmic Functions</b>																

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	
<b>District Objective</b> *Graph and apply the exponential function $y = e^x$ using real-world data.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I B IV A, B		<b>Quarter IV</b> <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> K. Use technology to interpret and graph <b>exponential</b> and <b>logarithmic functions</b> (e.g., compound growth, population, decibels).														<b>NCTM Standard</b> Pgs. 297-303	
<b>Text Correlation</b> 3.1, Pg. 238-251		<b>Rating</b> 1		<b>Additional Resources</b> Radioactive Squares Activity; Compound Interest Activity; Newton's Law of Cooling Activity; Graphics Calculator; <a href="http://score.kings.k12.ca.us/lessons/growth/growth1.html">http://score.kings.k12.ca.us/lessons/growth/growth1.html</a> <a href="http://id.mind.net/~zona/mmts/functionInstitute/functionInstitute.html">http://id.mind.net/~zona/mmts/functionInstitute/functionInstitute.html</a>											
<b>Assessment</b>  1. (District) Without using a graph utility, sketch the graph of $f(x) = 3^x - 2$ .  2. (District) The spread of a flu virus through a certain population is modeled by $y = \frac{1000}{1 + 990e^{-0.7t}}$ where $y$ is the total number infected after $t$ days. In how many days will 612 people be infected with the virus?  3. (District) A certain population decreases according to the equation $y = 300 - 5e^{0.2t}$ . Find the initial population and the population (to the nearest integer) when $t = 10$ .															

## Honors Math Analysis: Exponential and Logarithmic Functions

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	
<b>District Objective</b> *Graph logarithmic equations.  *Critical to success in next course.												<b>PASS Process Standard</b> I B IV A, B		<b>Quarter IV</b> <b>No. Days</b> 1	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> K. Use technology to interpret and graph <b>exponential</b> and <b>logarithmic functions</b> (e.g., compound growth, population, decibels).													<b>NCTM Standard</b> Pgs. 297-300		
<b>Text Correlation</b> 3.2, Pg. 254-262								<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://www.univie.ac/future.media/moe/galerie/fun2/fun2.htm">http://www.univie.ac/future.media/moe/galerie/fun2/fun2.htm</a> 1					
<b>Assessment</b>  (District) Use a graphing utility to find a logarithmic model, $y = a + b \ln x$ , through the points (1,2), (2, 2.7), (3, 3.1), (4, 3.4), (5, 3.6).															

## Honors Math Analysis: Exponential and Logarithmic Functions

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	
<b>District Objective</b> *Solve equations and evaluate expressions involving logarithms.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A V B		<b>Quarter IV</b> <b>No. Days</b> 3	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> J. Use technology to apply the inverse relationship between <b>exponential</b> and <b>logarithmic functions</b> to solve problems.														<b>NCTM Standard</b> Pgs. 297-300	
<b>Text Correlation</b> 3.2, Pgs. 252-257 3.3, Pgs. 263-266								<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or Graphics Calculator; <a href="http://www.exploremath.com/lessonplans/index.cfm">http://www.exploremath.com/lessonplans/index.cfm</a> <a href="http://mathnotes.com/aw_intermediate.html">http://mathnotes.com/aw_intermediate.html</a>					
<b>Assessment</b>  1. (District) Solve for $x$ : $2x + \ln e^{4x} = 12$ .  2. (District) Solve for $x$ : $\log_3 e^{x^2} + 5 \log_3 e^{x^2 - 2x}$															

# Honors Math Analysis: Exponential and Logarithmic Functions

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	
<b>District Objective</b> *Find logarithms and antilogarithms of numbers.  *Critical to success in next course.											<b>PASS Process Standard</b> I A II C V B		<b>Quarter IV</b> <b>No. Days</b> 2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> J. Use technology to apply the inverse relationship between <b>exponential</b> and <b>logarithmic functions</b> to solve problems. K. Use technology to interpret and graph <b>exponential</b> and <b>logarithmic functions</b> (e.g., compound growth, population, decibels).													<b>NCTM Standard</b> Pgs. 297-300		
<b>Text Correlation</b> 3.2, Pgs. 252-258					<b>Rating</b> 2		<b>Additional Resources</b> Scientific and/or Graphics Calculator; <a href="http://www.exploremath.com/lessonplans/index.cfm">http://www.exploremath.com/lessonplans/index.cfm</a> <a href="http://mathnotes.com/aw_intermediate.html">http://mathnotes.com/aw_intermediate.html</a>								
<b>Assessment</b>  1. (ACT) If $\log_x 81 = 4$ , then $x = ?$ (a) 3                      (b) 9                      (c) $\frac{81}{4}$ (d) $\frac{81}{\log^4}$ (e) $81^4$  2. (District) Write as the logarithm of a single quantity: $\frac{1}{5} [3 \log(x+1) + 2 \log(x-1) - \log 7].$  3. Evaluate: $\log \oplus \sqrt{2} \cdot j$  4. Solve for $x$ : $\ln x = 3$ .  5. Solve for $x$ : $\log x = 0.5$ .															

## Honors Math Analysis: Exponential and Logarithmic Functions

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
											I	M		MM	
<b>District Objective</b> Use logarithms to compute powers and roots.												<b>PASS Process Standard</b> I A V B		<b>Quarter IV</b> <b>No. Days</b> 1	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>II. Functions and Relations (Algebra II)</b> K. Use technology to interpret and graph <b>exponential and logarithmic functions</b> (e.g., compound growth, population, decibels).														<b>NCTM Standard</b> Pgs. 297-300	
<b>Text Correlation</b> 3.2, Pgs. 252-258								<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or Graphics Calculator; <a href="http://www.exploremath.com/lessonplans/index.cfm">http://www.exploremath.com/lessonplans/index.cfm</a> <a href="http://mathnotes.com/aw_intermediate.html">http://mathnotes.com/aw_intermediate.html</a>					
<b>Assessment</b> 1. (District) Evaluate: $\log\sqrt{18}$ .  2. (District) Evaluate: $\log_a a^3$ .															

## Honors Math Analysis: Exponential and Logarithmic Functions

K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
											I	M		MM	
<b>District Objective</b> *Solve exponential and logarithmic equations.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A IV C V A		<b>Quarter IV</b> <b>No. Days</b> 4	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 297-300		
<b>Text Correlation</b> 3.4, Pgs. 270-276 3.5, Pg. 281								<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or Graphics Calculator; <a href="http://www.exploremath.com/lessonplans//index.cfm">http://www.exploremath.com/lessonplans//index.cfm</a> <a href="http://mathnotes.com/aw_intermediate.html">http://mathnotes.com/aw_intermediate.html</a>					
<b>Assessment</b>  1. (District) Solve for $x$ : $25^{x-2} = 5^{3x}$ .  2. (District) Solve for $x$ : $\log x + \log(x+3) = 1$ .															

## Honors Math Analysis: Sequences and Series

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	
<b>District Objective</b> *Use summation notation.  *Critical to success in next course.												<b>PASS Process Standard</b> II A IV B		<b>Quarter IV</b> <b>No. Days</b> 1/2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will...													<b>NCTM Standard</b> Pgs. 300-305		
<b>Text Correlation</b> 9.1, Pgs. 660-666								<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculators; <a href="http://ww2.mcgill.ca/course/204204B01/applets/usage.html">http://ww2.mcgill.ca/course/204204B01/applets/usage.html</a>					
<b>Assessment</b>  1. (District) Find the sum using the formulas for the sums of powers of integers: $\sum_{n=1}^{19} 2n^2$  2. (District) Use sigma notation to write the sum: $\frac{1}{2} + \frac{2}{6} + \frac{3}{24} + \frac{4}{120} + \frac{5}{720}$															

<b>Honors Math Analysis: Sequences and Series</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
												I/M		MM		
<b>District Objective</b> *Find the “ <i>n</i> th” term and arithmetic means of an arithmetic sequence.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I B II A, C		<b>Quarter IV</b> <b>No. Days</b> 1/2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP																
<b>PASS Objective</b> The student will... <b>III. Data Analysis, Statistics, and Probability (Algebra II)</b> F. Identify arithmetic and geometric series and <b>sequences</b> (e.g., <b>binomial expansion</b> , Pascal’s Triangle).														<b>NCTM Standard</b> Pgs. 297-303 Pgs. 305-306		
<b>Text Correlation</b> 9.2, Pgs. 667-670								<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or Graphics Calculators; <a href="http://forum.swarthmore.edu/library/more_info.html?id17459">http://forum.swarthmore.edu/library/more_info.html?id17459</a>						
<b>Assessment</b>  1. (District) Find the 30th term of the arithmetic sequence with $a_1 = -5$ and $d = \frac{1}{3}$ . (Assume that $n$ begins with 1.)  2. (District) The fourth term of an arithmetic sequence is 20, and the 13th term is 65. Write the first several terms of this sequence.  3. (District) Find the ninth term of the arithmetic sequence that begins with 2 and 9.																

## Honors Math Analysis: Sequences and Series

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal		
												I/M		MM			
<b>District Objective</b> Find and apply the sum of “ $n$ ” terms of an arithmetic series.												<b>PASS Process Standard</b> I A II A, C		<b>Quarter IV</b> <b>No. Days</b> 1/2			
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP																	
<b>PASS Objective</b> The student will...														<b>NCTM Standard</b> Pgs. 300-303			
<b>Text Correlation</b> 9.2, Pgs. 670-672			<b>Rating</b> 1		<b>Additional Resources</b> Scientific and/or Graphics Calculators; <a href="http://www.epsb.edmonton.ab.ca/schools/crestwood/number_patterns-2.7_quizc.htm">http://www.epsb.edmonton.ab.ca/schools/crestwood/number_patterns-2.7_quizc.htm</a>												

**Assessment**

(District) Logs are stacked in a pile. The top row has 20 logs, the row below has 22 logs, the row below has 24 logs and so on. If there are 10 rows, how many logs are in the stack?

**Honors Math Analysis: Sequences and Series**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M		MM	
<b>District Objective</b> *Find the “ <i>n</i> th” term of a geometric sequence.  <i>*Critical to success in next course.</i>											<b>PASS Process Standard</b> I B II A V B		<b>Quarter IV</b> <b>No. Days</b> 1		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input checked="" type="radio"/> ACT <input type="radio"/> AP															
<b>PASS Objective</b> The student will... <b>III. Data Analysis, Statistics, and Probability (Algebra II)</b> F. Identify arithmetic and geometric series and <b>sequences</b> (e.g., <b>binomial expansion</b> , Pascal’s Triangle).													<b>NCTM Standard</b> Pgs. 305-306 Pgs. 322-324		

<b>Text Correlation</b> 9.3, Pgs. 676-678	<b>Rating</b> 1	<b>Additional Resources</b> Scientific and/or Graphics Calculators; <a href="http://www.ugrad.math.ubc.ca/coursedoc/math102/java/m102/demos/series/geom.html">http://www.ugrad.math.ubc.ca/coursedoc/math102/java/m102/demos/series/geom.html</a>
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**Assessment**

1. (District) Write the first five terms of the geometric sequence where  $a_1 = 2$ ,  $a_3 = 12$ .

2. (ACT) In the geometric sequence  $8, 2, \frac{1}{2}, N, \dots$  what is the 4th term,  $N$ ?

- (a)  $\frac{1}{4}$       (b)  $\frac{1}{8}$       (c)  $\frac{1}{16}$       (d)  $\frac{1}{32}$       (e)  $\frac{1}{64}$

## Honors Math Analysis: Series and Sequences

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I/M		MM	
<b>District Objective</b> *Find and apply the sum of a geometric series.  <i>*Critical to success in next course.</i>												<b>PASS Process Standard</b> I A		<b>Quarter IV</b> <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will...												<b>NCTM Standard</b> Pgs. 297-300			

<b>Text Correlation</b> 9.3, Pg. 676-685	<b>Rating</b> 3	<b>Additional Resources</b> Modeling Geometric Sequences Activity; Graphics Calculators; <a href="http://www.ies.co.jp/math/java/misc/sum/sum.html">http://www.ies.co.jp/math/java/misc/sum/sum.html</a>
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**Assessment**

1. (District) Find the rational number representation of each repeating decimal.

1.  $0.\overline{36}$
2.  $0.\overline{297}$
3.  $0.\overline{318}$
4.  $1.\overline{38}$

2. (District) An individual buys a \$100,000 term life insurance policy. During the next five years the value of the policy will depreciate at the rate of 4% per year. (That is, at the end of year, the depreciated value is 96% of the value at the beginning of the year.) Find the depreciated value of the policy at the end of five years.

- (a) \$80,000    (b) \$84,934.66    \*(c) \$81,537.27    (d) \$78,275.78  
 (e) None of these

**Honors Math Analysis: Sequences and Series**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
											I	M			
<b>District Objective</b> Use the Binomial Theorem to expand binomials.												<b>PASS Process Standard</b> III A, C V B		<b>Quarter</b> IV <b>No. Days</b> 2	
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP															

<p><b>PASS Objective</b> The student will...</p> <p><b>III. Data Analysis, Statistics, and Probability (Algebra II)</b> F. Identify arithmetic and geometric series and <b>sequences</b> (e.g., <b>binomial expansion</b>, Pascal's Triangle).</p>	<p><b>NCTM Standard</b> Pgs. 297-300</p>
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<p><b>Text Correlation</b> 9.5, Pgs. 697-704</p>	<p><b>Rating</b> 1</p>	<p><b>Additional Resources</b> Pascal's Triangle Activity; Graphics Calculators; <a href="http://www.math.ohio-state.edu/~btk/Pascal/">http://www.math.ohio-state.edu/~btk/Pascal/</a></p>
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**Assessment**

(District) Use the Binomial Theorem to expand and simplify:  $(\sqrt{x} + 2)^3$

<b>Honors Math Analysis: Limits</b>																
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal	
												I		E	M	

<b>District Objective</b> *Evaluate limits approaching a number graphically, numerically, and analytically using direct substitution, cancellation technique, and rationalization technique.										<b>PASS Process Standard</b> I A II A III A				<b>Quarter IV</b> <b>No. Days</b> 4	
*Critical to success in next course.															
○ ITBS   ○ CRT   ○ EXPLORE   ○ EOI   ○ PLAN   ○ ACT   ● AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 297-303 Pgs. 322-324					
<b>Text Correlation</b> 12.1, 12.2, Pgs. 871-885				<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://www.math.odu.edu/cdii/calcanim/main.html">http://www.math.odu.edu/cdii/calcanim/main.html</a>									
<b>Assessment</b>															
1. (District) Use a graphing utility to graph the function for $f(x) = -x^2 + 4x$ and then estimate $\lim_{x \rightarrow 2} f(x)$ if it exists.															
(a) 0            (b) 12            *(c) 4            (d) -12            (e) None of these															
2. (District) Find $\lim_{x \rightarrow 3} (-2x^2 + 1)$ .															
3. (District) Find the limit: $\lim_{x \rightarrow 3^+} \sqrt{2x - 5}$															
(a) 1            (b) 0            (c) 2i            (d) Does not exist    (e) None of these															
<b>Honors Math Analysis: Limits</b>															
K	1	2	3	4	5	6	7	Pre-Alg	Alg 1	Geom	Alg II	MA	P & S	Pre-Cal	AP Cal
												I		E	M

<b>District Objective</b> *Find the limit of the terms of an infinite sequence.  <i>*Critical to success in next course.</i>		<b>PASS Process Standard</b> I A IV A V C	<b>Quarter IV</b> <b>No. Days</b> 1
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input type="radio"/> AP			
<b>PASS Objective</b> The student will...			<b>NCTM Standard</b> Pgs. 305-306 Pgs. 322-324

<b>Text Correlation</b> 12.4, Pgs. 899-902	<b>Rating</b> 1	<b>Additional Resources</b> Scientific and/or Graphics Calculators; <a href="http://www.math.odu.edu/cbii/calcanim/main.html">http://www.math.odu.edu/cbii/calcanim/main.html</a>
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**Assessment**

(District) Find the limit of each sequence and use a graphing utility to complete the table.

$n$	$10^0$	$10^1$	$10^2$	$10^3$	$10^4$	$10^5$	$10^6$
$a_n$							

$$1. a_n = \frac{1}{n} + \frac{1}{n} + \frac{1}{n} + \dots + \frac{1}{n}$$

$$2. a_n = \frac{4}{n} + \frac{4}{n} + \frac{4}{n} + \dots + \frac{4}{n}$$

$$3. a_n = 6 - \frac{4}{n^2} + \frac{4}{n^2} + \dots + \frac{4}{n^2}$$

$$4. a_n = \frac{16}{n^4} + \frac{16}{n^4} + \frac{16}{n^4} + \dots + \frac{16}{n^4}$$

$$5. a_n = \frac{16}{n^3} + \frac{16}{n^3} + \frac{16}{n^3} + \dots + \frac{16}{n^3}$$

$$6. a_n = \frac{1}{n^2} + \frac{1}{n^2} + \frac{1}{n^2} + \dots + \frac{1}{n^2}$$

**Honors Math Analysis: Limits**

K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I		E	M

<b>District Objective</b> *Evaluate limits approaching infinity and determine the end behavior of a function.  <i>*Critical to success in next course.</i>										<b>PASS Process Standard</b> I A II C III A			<b>Quarter IV</b> <b>No. Days</b> 2		
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP															
<b>PASS Objective</b> The student will...										<b>NCTM Standard</b> Pgs. 297-303 Pgs. 322-324					
<b>Text Correlation</b> 12.4, Pgs. 895-902					<b>Rating</b> 1		<b>Additional Resources</b> Graphics Calculator; <a href="http://math.rice.edu/~lanius/Lessons/Series/Infinite.htm">http://math.rice.edu/~lanius/Lessons/Series/Infinite.htm</a>								
<b>Assessment</b>															
(District) Find the limit (if it exists): $\lim_{x \rightarrow \infty} \frac{x^2 + 2x}{3x^2 - 6x + 1}$															
(a) $-\frac{3}{2}$															
(b) 0															
(c) $\frac{1}{3}$															
(d) Limit does not exist.															
(e) None of these															
<b>Honors Math Analysis: Limits</b>															
K	1	2	3	4	5	6	7	Pre- Alg	Alg 1	Geom	Alg II	MA	P & S	Pre- Cal	AP Cal
												I		E	M

<b>District Objective</b> Use technology to explore and determine convergence and divergence.		<b>PASS Process Standard</b> V B	<b>Quarter</b> IV <b>No. Days</b> 1
<input type="radio"/> ITBS <input type="radio"/> CRT <input type="radio"/> EXPLORE <input type="radio"/> EOI <input type="radio"/> PLAN <input type="radio"/> ACT <input checked="" type="radio"/> AP			
<b>PASS Objective</b> The student will...			<b>NCTM Standard</b> Pgs. 300-305
<b>Text Correlation</b> 12.4, Pgs. 899-902	<b>Rating</b> 1	<b>Additional Resources</b> Graphics Calculator; <a href="http://univie.ac.at/future.media/moe/tests/grenz/konvdir.html">http://univie.ac.at/future.media/moe/tests/grenz/konvdir.html</a>	
<b>Assessment</b>  (District) In exercises 1-4, use a graphing utility to create a scatter plot of the terms of the sequence. Based on the results, decide whether the sequence converges or diverges. If it converges, estimate its limit.			
1. $a_n = 4 \frac{E^n}{GK}$		2. $a_n = 3 \frac{E^n}{GK}$	
3. $a_n = \frac{3[1 - 1.5^n]}{1 - 1.5}$		4. $a_n = \frac{3[1 - 0.5^n]}{1 - 0.5}$	

