Pre-Calculus Distance Learning Packet
Virtual Office Hours: 9:00 a.m.- 11:00 a.m. & 1:00 p.m.- 3:00 p.m.

For Week 6 & 7 (May 4-15), you are to choose items from the choice boards to complete. Some activities count for multiple days. You may or may not be completing 5 assignments per week depending on your choices. Refer to the choice board for these breakdowns. When selecting choices that count for more than one day, be sure to **rewrite** the title on the calendar for each consecutive day of its worth. For example: Khan Academy 1 counts as 2 days, so if you choose to complete this activity starting on May 4, you would write Khan Academy 1 on both May 4 and May 5.

May 4	May 5	May 6	May 7	May 8
Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)
May 11	**May 12**	**May 13**	**May 14**	**May 15**
Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)	Learning Tasks: **Choice Board Activity Chosen:** _____ (title of activity)
May 18	**May 19**	**May 20**	**May 21**	**May 22**
Learning Tasks: **Review Questions #1-4**	Learning Tasks: **Review Questions #5-8**	Learning Tasks: **Review Questions #9-12**	Learning Tasks: **Review Questions #13-16**	Learning Tasks: **Review Questions #17-20**

Week 1 Standards: PC. AAPR.3, PC.ASE.2, PC.FBF.3, PC.FBF.5, PC.FIF.4, PC.FIF.7, PC.FLQE.4, PC.FT.7, PC.NCNS.2, PC.NCNS.9
Week 2 Standards: PC. AAPR.6, PC.ASE.2, PC.FBF.5, PC.FIF.4, PC.FIF.7, PC.FLQE.4, PC.FT.2, PC.FT.7, PC.NCNS.9
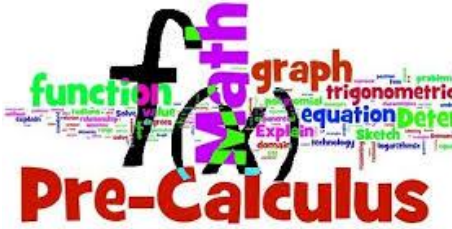**Week 3 Standards:** PC.AAPR.6, PC.AAPR.7, PC.FIF.4, PC.FIF.7, PC.FT.2

Please note that the last day for Seniors to submit assignments is May 15th. All Seniors will be exempt from completing any Distance Learning assignments for May 14-May 22. Assignments for all Distance Learning must be <u>submitted (digitally on Schoology or paper packets to schools) no later than May 15th for Seniors</u>. Details about the process for submitting packets to individual schools will be communicated by building administrators following a district-wide announcement from Merry Glenne Piccolino

Precalculus Choice Board

Phase 3

May 4 -8: Choose from the following activities to equal 5 days.

Functions & Zeros	Trig Identity Find It!	Analyze a Polynomial 1
Match the given zeros of a function to the correct polynomial function. Start with the zeros and multiply factors, or factor/graph/solve the function. Enter your answers on the provided blanks or enter them in Schoology. Counts as 2 days	Cross off equivalent trig expressions until only one expression remains. Choose the correct expression in Schoology or circle it on your paper packet. Counts as 1 day	Analyze the given polynomial function. Include domain, range, x- and y-intercept(s), end behavior, increasing/decreasing intervals, positive/negative intervals, and extrema. Counts as 1 day
Khan Academy 1 Complete the Complex Numbers Unit (https://www.khanacademy.org/ math/precalculus/x9e81a4f98389 efdf:complex) Submit a screen shot of the unit test score on Schoology. Counts as 2 days	Pre-Calculus	**Logarithm Maze** Solve each log and complete the maze. Show your work on the given maze. Submit a screen shot of the completed maze in Schoology or turn in the paper copy with your packet. Counts as 1 day
Radical Equation Matching Match the given equations and graphs. Write your answer in the blanks or enter your answers into Schoology. Counts as 1 day	**Analyze a Logarithm** Analyze the given logarithmic graph. Include domain, range, x- and y-intercept(s), end behavior, asymptote, increasing/decreasing intervals, and positive/negative intervals. Counts as 1 day	**Analyze a Rational Function** Describe the horizontal, vertical, and slant asymptotes of the given rational function. Identify the domain and holes of the function. Counts as 1 day

Materials needed for May 4-8 Choice Board

Radical Equation Matching

❶ $\sqrt{x-1}=1$	❷ $\sqrt{x+3}=2$	❸ $\sqrt{x}=1$
❹ $\sqrt{x+1}=2$	❺ $\sqrt{x-2}=2$	❻ $\sqrt{x-2}=1$
❼ $\sqrt{x+4}=2$	❽ $\sqrt{x+3}=1$	❾ $\sqrt{x-3}=1$

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___ 7. ___

8. ___ 9. ___ (Or enter answers in Schoology)
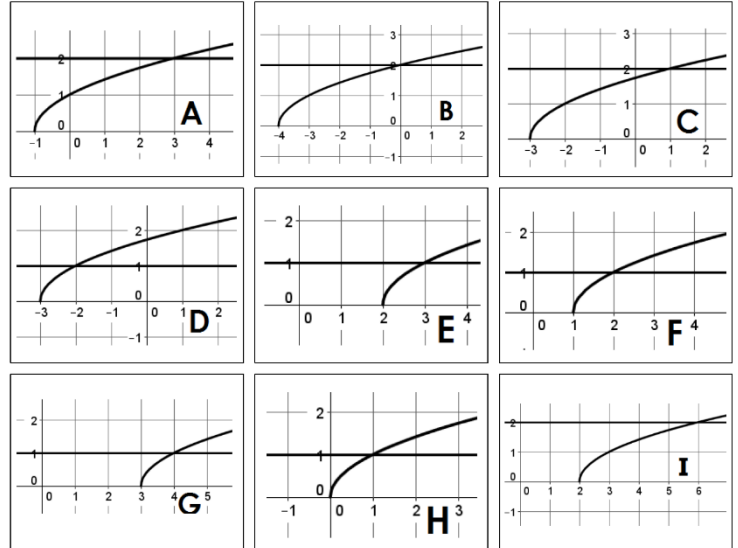
Analyze a Polynomial 1 $y = -0.5x^3 + 6.5x - 6$

Round to the nearest tenth
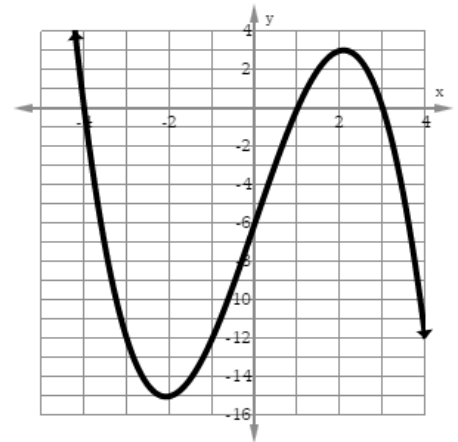
Domain: Range:

Inc/Dec Int: Pos/Neg Int:

Extrema: End Behavior:

x-int: y-int:

Analyze a Logarithm $y = \log_4(x+2) + 1$

Round to the nearest hundredth
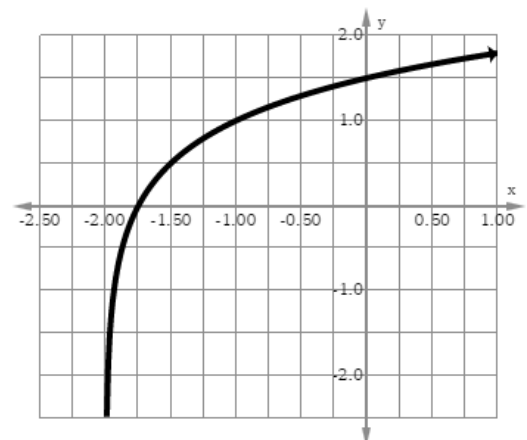
Domain: Range:

Inc/Dec Int: Pos/Neg Int:

Asymptote: End Behavior:

x-int: y-int:

Materials needed for May 4-8 Choice Board

Analyze a Rational Function $y = \frac{3x^2+3x-6}{x^2-3x-10}$
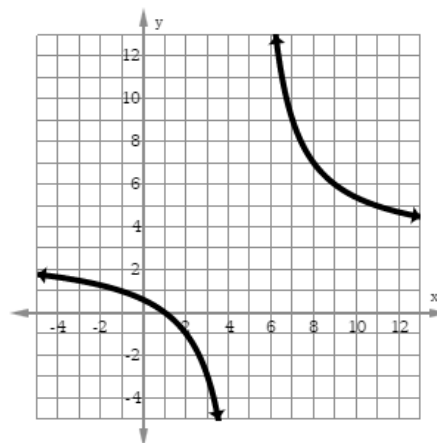
Domain:

Vertical Asymptote: Holes:

Horizontal Asymptote: x-int:

Slant Asymptote: y-int:

Trig Identity Find It!

Find matching pairs of trig expressions and cross them off. Only one expression will remain. Circle it or enter your answer in Schoology.

Trig Identities

$\frac{1}{\csc\theta}$ $1 + \cot^2\theta$ $\sec^2\theta$

$\frac{1}{\sec\theta}$ $\frac{\cos\theta}{\sin\theta}$

$1 + \tan^2\theta$ $\frac{1}{\cot\theta}$ $\cos\theta$

$\csc^2\theta - \cot^2\theta$ 1 $\frac{1}{\cos\theta}$

$\sec\theta$ $\sin\theta$ $\frac{1}{\sin\theta}$

$\tan\theta$ $\cot\theta$ $\csc\theta$

Functions & Zeros

Match each function to its zeros. Write your answers here or enter them in Schoology.

1. $f(x) = 3x^3 + 75x$
2. $f(x) = -5x^4 + 5x^3 + 60x^2$
3. $f(x) = 4x^3 - 10x^2 - 8x + 6$
4. $f(x) = 3x^3 - 2x^2 - 21x + 14$
5. $f(x) = -x^4 - 2x^3 + 27x^2 - 108$
6. $f(x) = x^3 - 10x^2 + 34x - 40$
7. $f(x) = x^4 + 2x^3 - 8x^2 - 24x - 16$
8. $f(x) = -x^4 + 2x^3 + 12x^2 - 40x + 32$
9. $f(x) = 4x^3 - 14x^2 - 30x$
10. $f(x) = x^4 + 7x^2 - 18$

A. $x = -6, -2, 3M2$ B. $x = -1, \frac{1}{2}. 3$

C. $x = 0, \pm 5i$ D. $x = 4, 3 \pm i$

E. $x = -2M2, 1 \pm \sqrt{5}$ F. $x = \frac{-3}{2}, 0, 5$

G. $x = no\ solution$ H. $x = -4, 2$

I. $x = \frac{2}{3}, \pm\sqrt{7}$ J. $x = \frac{2}{3}M3$

K. $x = \pm\sqrt{2}, \pm 3i$ L. $x = -3, 0M2, 4$

M. $x = -3, 0, 4$ N. $x = -4, 2M3$

Materials needed for May 4-8 Choice Board

Logarithm Maze

Solve each log. Use the solutions to complete the maze. Show your work. Upload a picture of your completed maze in Schoology.

START:
$\log_3 81 = x$

$\log_{27} x = \dfrac{1}{3}$

$\log_5 x = 2$

$\log_{32} x = \dfrac{1}{5}$

5

3

25

4   −4   64   −64   −25   0.1   2

$\log_8 x = \dfrac{1}{3}$

$\log_4 x = 3$

$\log_9 x = \dfrac{1}{2}$

$\log 0.01 = x$

2   12   3

−2   −9   10   6   −6   −2   10

$\log_{\frac{1}{3}} x = -2$

$\log_4 256 = x$

$\log_3 x = -2$

$\log_{\frac{1}{5}} x = 2$

4    $\dfrac{1}{9}$ 32

9    $\dfrac{1}{9}$ 5   −9   9   −6 $\dfrac{1}{25}$

$\log_{16} x = \dfrac{1}{4}$

$\log_2 64 = x$

$\log_{\sqrt{5}} 5 = x$

STOP!

2   6   2

Precalculus Choice Board

Phase 3

May 11-15: Choose from the following activities to equal 5 days.

Proving Trig Identities Use the given proof pieces to verify each trig equation. Cut and paste or simply number the given pieces with the correct order. Write on the packet or upload a picture into Schoology. *Counts as 2 days*	**Trig Pile Up** Use right triangle trigonometry to solve for the indicated side in the given diagram. Write you answer on the diagram or enter your answer into Schoology. *Counts as 2 days*	**Analyze a Polynomial 2** Analyze the given polynomial function. Include domain, range, x- and y-intercept(s), end behavior, increasing/decreasing intervals, positive/negative intervals, and extrema. *Counts as 1 day*
Khan Academy 2 Complete the Polynomials Unit (https://www.khanacademy.org/math/precalculus/x9e81a4f98389efdf:polynomials) Submit a screen shot of the unit test score on Schoology. *Counts as 2 days*	Pre-Calculus	**Logarithm Square Puzzle** Cut apart the 16 individual squares. Reassemble them into a 4x4 square by finding the solution to each logarithm. Cut and paste, enter your answer into the grid provided, or enter your answer in Schoology. *Counts as 2 days*
Name that Function Complete the chart using the given chart and functions. Write in the correct answers or upload a picture of your completed table in Schoology. *Counts as 2 days*	**Analyze an Exponential** Analyze the given exponential function. Include domain, range, x- and y-intercept(s), end behavior, asymptote increasing/decreasing intervals, and positive/negative intervals. *Counts as 1 day*	**Analyze a Trig Graph** Determine the parent trig function represented. Identify the amplitude, period, phase shift, and vertical shift of the given trig function. *Counts as 1 day*

Materials needed for May 11-15 Choice Board

Trig Pile Up!

How long is this side?

2.2 cm

53°

37°

3.8 cm

71°

21°

3.2 cm

2.9 cm

1.7 cm

4.3 cm

42°

2.5 cm

11°

34°

8 cm

1.7 cm

2.1 cm

3.6 cm
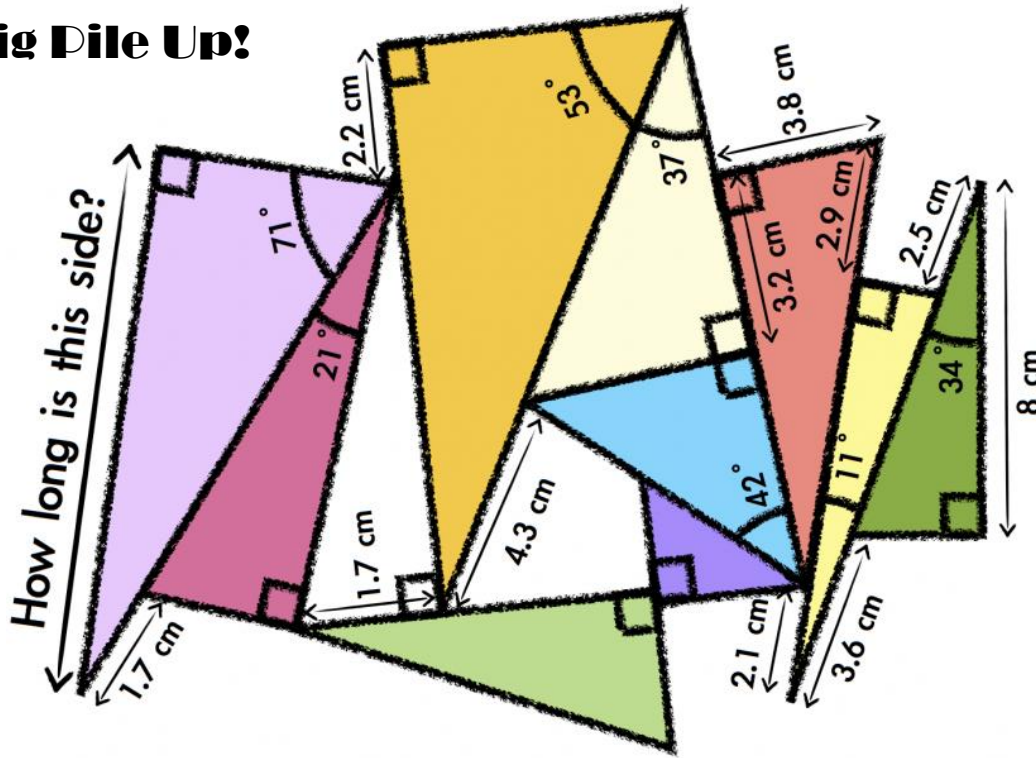
Analyze a Polynomial 2 $y = -x^4 - 3x^3 + 3x^2 + 11x + 6$

Round to the nearest tenth
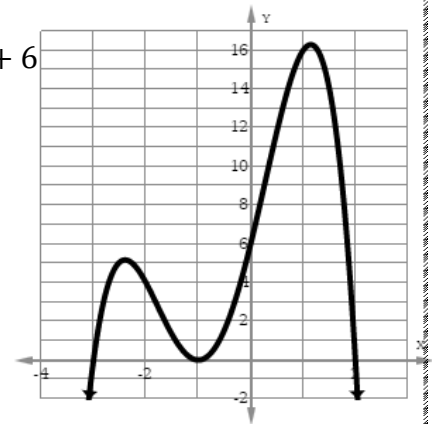
Domain: Range:

Inc/Dec Int: Pos/Neg Int:

Extrema: End Behavior:

x-int: y-int:

Analyze an Exponential $y = \frac{1}{2}^{x+3} - 4$

Round to the nearest tenth
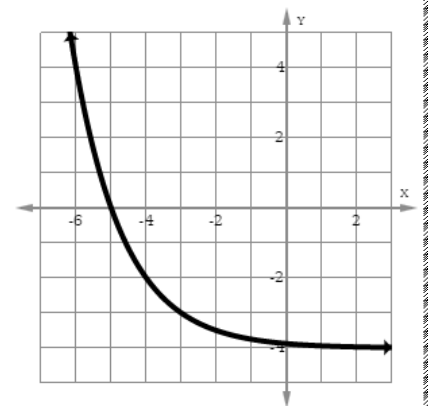
Domain: Range:

Inc/Dec Int: Pos/Neg Int:

Asymptote: End Behavior:

x-int: y-int:
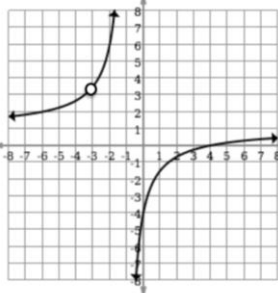
Materials needed for May 11-15 Choice Board
Name that Function

Use the eight functions below to complete the first column. Use any of information given to help you match the unfactored function/graph to the correct row. Then fill in all the missing info for each function. Fill in your answers on the chart provided or upload a picture of your completed chart to Schoology.

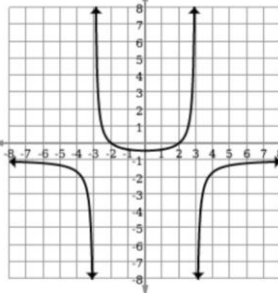| Function	Function in factored form and simplified (if possible)	Vertical Asymptote(s)	Hole(s)	Horizontal Asymptote	y-intercept(s)	x-intercept(s)	Domain
◯				$y = 0$	$(0, ½)$	none	$\{x \in R \mid x \neq -2, x \neq 2\}$
◯		$x = -1$	$x = -3$			$(4, 0)$	
◯	$f(x) = \dfrac{-2(x-4)}{x-1}$				$(0, -8)$		$\{x \in R \mid x \neq 1\}$
◯		$x = -1$	none	none		$(-4, 0)$ and $(-2, 0)$	
◯	$f(x) = \dfrac{x(x+4)(x-2)}{4(x+2)(x-1)}$				$(0, 0)$		$\{x \in R \mid x \neq -2, x \neq 1\}$
◯		$x = 0$			none	$(4, 0)$	$\{x \in R \mid x \neq 0\}$
◯	$f(x) = \dfrac{3}{x-1}$	$x = 1$	$x = -3$		$(0, -3)$		
◯			none	$y = -1$	$(0, -.44)$		$\{x \in R \mid x \neq -3, x \neq 3\}$

FUNCTION A
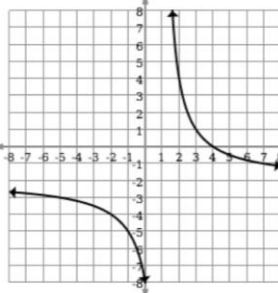$A(x) = \dfrac{x^2 - x - 12}{x^2 + 4x + 3}$

FUNCTION B
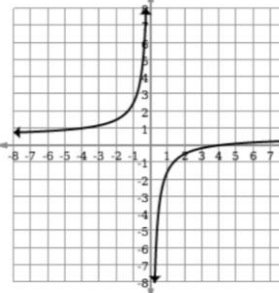$B(x) = \dfrac{-x^2 + 4}{x^2 - 9}$

FUNCTION C
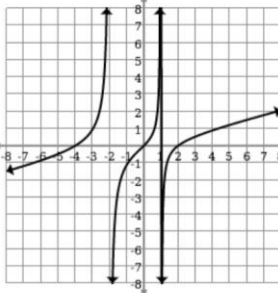$C(x) = \dfrac{-2x + 8}{x - 1}$

FUNCTION D
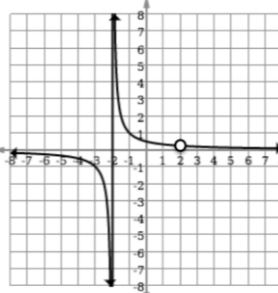$D(x) = \dfrac{x - 4}{2x}$

FUNCTION E
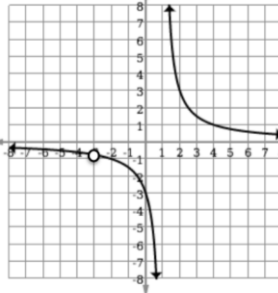$E(x) = \dfrac{x^3 + 2x^2 - 8x}{4x^2 + 4x - 8}$

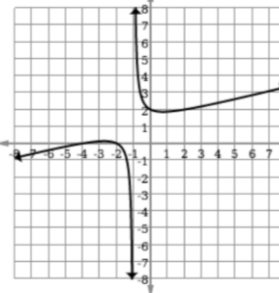
FUNCTION F
$F(x) = \dfrac{x - 2}{x^2 - 4}$

FUNCTION G
$G(x) = \dfrac{3x + 9}{x^2 + 2x - 3}$

FUNCTION H
$H(x) = \dfrac{x^2 + 6x + 8}{4x + 4}$

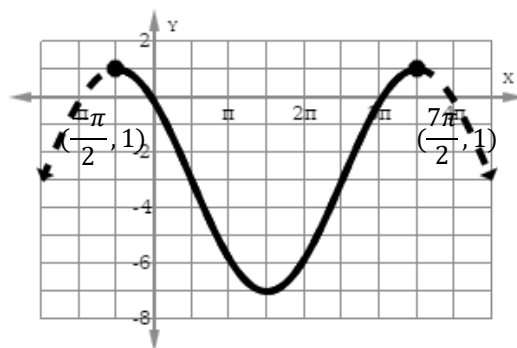# Materials needed for May 11-15 Choice Board

Analyze a Trig Function

Parent Function: Amplitude:

Period: Phase Shift:

Vertical Shift:

$\left(\dfrac{-\pi}{2}, 1\right)$ $\left(\dfrac{7\pi}{2}, 1\right)$

Proving Trig Identities

Use the pieces of each proof to verify the given trig equation. Cut and paste or simply number the given pieces with the correct order. Write on the packet or upload a picture into Schoology.

1. $\cos\alpha + \sin\alpha\tan\alpha = \sec\alpha$

$\dfrac{\cos^2\alpha + \sin^2\alpha}{\cos\alpha}$

$\left(\dfrac{\cos\alpha}{\cos\alpha}\right)\cos\alpha + \sin\alpha\left(\dfrac{\sin\alpha}{\cos\alpha}\right)$

$\dfrac{1}{\cos\alpha}$

$\sec\alpha$

$\cos\alpha + \sin\alpha\left(\dfrac{\sin\alpha}{\cos\alpha}\right)$

2. $\sin^2\beta\bullet\csc^2\beta - \sin^2\beta = \cos^2\beta$

$\cos^2\beta$

$\sin^2\beta\left(\dfrac{\cos^2\beta}{\sin^2\beta}\right)$

$\sin^2\beta\left(\cot^2\beta\right)$

$\sin^2\beta\left(\csc^2\beta - 1\right)$

3. $\csc\omega - \sin\omega = \cot\omega\,\cos\omega$

$\dfrac{\cos\omega}{\sin\omega}\bullet\cos\omega$

$\cot\omega\bullet\cos\omega$

$\dfrac{\cos^2\omega}{\sin\omega}$

$\dfrac{1 - \sin^2\omega}{\sin\omega}$

$\dfrac{1}{\sin\omega} - \sin\omega$

$\dfrac{1}{\sin\omega} - \sin\omega\left(\dfrac{\sin\omega}{\sin\omega}\right)$

4. $\tan x + \cot x = \sec x\csc x$

$\dfrac{1}{\cos x \sin x}$

$\dfrac{\sin^2 x + \cos^2 x}{\cos x \sin x}$

$\dfrac{1}{\cos x}\bullet\dfrac{1}{\sin x}$

$\left(\dfrac{\sin x}{\sin x}\right)\dfrac{\sin x}{\cos x} + \dfrac{\cos x}{\sin x}\left(\dfrac{\cos x}{\cos x}\right)$

$\sec x\bullet\csc x$

$\dfrac{\sin x}{\cos x} + \dfrac{\cos x}{\sin x}$

5. $\dfrac{\sec\alpha}{\sin\alpha} - \dfrac{\sin\alpha}{\cos\alpha} = \cot\alpha$

$\cot\alpha$

$\dfrac{\cos^2\alpha}{\sin\alpha\cos\alpha}$

$\dfrac{\cos\alpha}{\sin\alpha}$

$\dfrac{1 - \sin^2\alpha}{\sin\alpha\cos\alpha}$

$\left(\dfrac{\cos\alpha}{\cos\alpha}\right)\left[\dfrac{\sec\alpha}{\sin\alpha} - \dfrac{\sin\alpha}{\cos\alpha}\right]\left(\dfrac{\sin\alpha}{\sin\alpha}\right)$

$\dfrac{\sec\alpha\cos\alpha}{\sin\alpha\cos\alpha} - \dfrac{\sin^2\alpha}{\sin\alpha\cos\alpha}$

6. $\dfrac{1}{1-\cos x} + \dfrac{1}{1+\cos x} = 2\csc^2 x$

$\dfrac{1+\cos x}{1-\cos^2 x} + \dfrac{1-\cos x}{1-\cos^2 x}$

$2\csc^2 x$

$\left(\dfrac{1+\cos x}{1+\cos x}\right)\left[\dfrac{1}{1-\cos x} + \dfrac{1}{1+\cos x}\right]\left(\dfrac{1-\cos x}{1-\cos x}\right)$

$\dfrac{2}{\sin^2 x}$

$\dfrac{1+\cos x+1-\cos x}{1-\cos^2 x}$

7. $\dfrac{\sec^2\theta - \tan^2\theta + \tan\theta}{\sec\theta} = \sin\theta + \cos\theta$

$\sin\theta + \cos\theta$

$\dfrac{\tan^2\theta + 1 - \tan^2\theta + \tan\theta}{\sec\theta}$

$\dfrac{1}{\sec\theta} + \dfrac{\tan\theta}{\sec\theta}$

$\cos\theta + \dfrac{\sin\theta}{\cos\theta\sec\theta}$

$\dfrac{1 + \tan\theta}{\sec\theta}$

8. $\dfrac{1-\sin\theta}{\cos\theta} + \dfrac{\cos\theta}{1-\sin\theta} = 2\sec\theta$

$\dfrac{2}{\cos\theta}$

$\left(\dfrac{1-\sin\theta}{1-\sin\theta}\right)\left[\dfrac{1-\sin\theta}{\cos\theta} + \dfrac{\cos\theta}{1-\sin\theta}\right]\left(\dfrac{\cos\theta}{\cos\theta}\right)$

$2\sec\theta$

$\dfrac{2-2\sin\theta}{\cos\theta(1-\sin\theta)}$

$\dfrac{2(1-\sin\theta)}{\cos\theta(1-\sin\theta)}$

$\dfrac{1-2\sin\theta + \sin^2\theta + \cos^2\theta}{\cos\theta(1-\sin\theta)}$

Materials needed for May 11-15 Choice Board
Logarithm Square Puzzle

Cut apart the 16 squares. Solve each logarithm. The solution will be on another square. Logs and their solutions will be on adjoining squares. Reassemble the 16 pieces to form another 4x4 square. (Hint: No pieces will be turned upside down.) Write the letter of your solution squares on the grid to the right or enter your solutions in Schoology.

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.

Row 1

Square A — top: $x = \dfrac{3}{2}$; left: $x = 10$; right: $\log_2 64 = x$; bottom: $x = \dfrac{5}{4}$

Square B — top: $x = -3$; left: $x = 0$; right: $\log_{55} x = 0$; bottom: $\log_{\frac{1}{3}} 81 = x$

Square C — top: $x = \dfrac{1}{3}$; left: $x = 1$; right: $\log_4 x = 6$; bottom: $\log_{81} 3 = x$

Square D — top: $x = 12$; left: $\log_6 x = 17$; right: $\log_3 x = 5$; bottom: $\log_x \sqrt{7} = \dfrac{1}{2}$

Row 2

Square E — top: $x = 2$; left: $x = 3$; right: $\log_4 x = 8$; bottom: $x = \dfrac{4}{5}$

Square F — top: $x = -5$; left: $\log_7 x = 21$; right: $\log_{16} 8 = x$; bottom: $\log_{\sqrt{5}} \dfrac{1}{5} = x$

Square G — top: $x = -4$; left: $x = 4$; right: $\log_{27} x = \dfrac{2}{3}$; bottom: $\log_{\frac{1}{4}} \dfrac{1}{2} = x$

Square H — top: $x = -6$; left: $x = 81$; right: $\log_{\sqrt{2}} x = 6$; bottom: $\log_{10} 0.001 = x$

Row 3

Square I — top: $x = 7$; left: $x = 11$; right: $\log_x 1000 = 3$; bottom: $\log_{17} x = 6$

Square J — top: $\log_7 x = 5$; left: $x = 8$; right: $x = 7$; bottom: $\log_8 2 = x$

Square K — top: $x = \dfrac{1}{2}$; left: $x = 6$; right: $\log_5 125 = x$; bottom: $\log_5 x = 7$

Square L — top: $x = -2$; left: $x = 13$; right: $\log_2 0.5 = x$; bottom: $\log_{\sqrt{3}} 729 = x$

Row 4

Square M — top: $x = \dfrac{1}{4}$; left: $x = 9$; right: $x = 6$; bottom: $\log_{11} 121 = x$

Square N — top: $\log_8 x = 3$; left: $x = \dfrac{3}{4}$; right: $\log_{\sqrt{3}} x = 8$; bottom: $\log_x \sqrt{3} = \dfrac{1}{6}$

Square O — top: $x = \dfrac{4}{3}$; left: $x = 243$; right: $\log_x 16 = 2$; bottom: $\log_9 27 = x$

Square P — top: $x = 27$; left: $x = -1$; right: $\log_{23} 1 = x$; bottom: $\log_8 16 = x$

Name_____

Review

Instructor _____

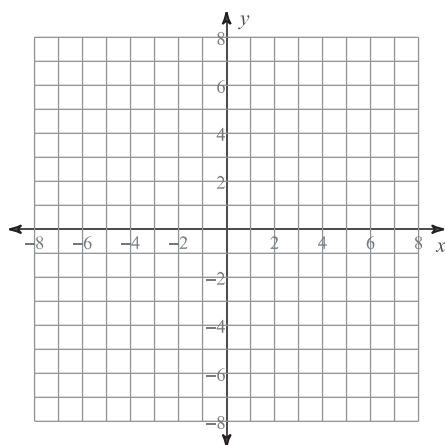**Evaluate each function.**

1) $f(n) = |n|$; Find $f(4)$

2) $w(t) = 3^{t-1}$; Find $w(-2)$

3) $g(x) = 4x - 3$; Find $g(x - 4)$

4) $w(n) = n^2 - 2$; Find $w(n + 1)$

Graph each function.

5) $f(x) = \dfrac{x^2 + 3x - 4}{-x^2 + x + 6}$

Identify the points of discontinuity of each.

6) $f(x) = \dfrac{3x^2 - 27}{x^2 - 2x - 3}$

Identify the vertical asymptotes of each.

7) $f(x) = \dfrac{3}{x^2 - 2x - 3}$

Identify the holes of each.

8) $f(x) = \dfrac{-x^2 - 4x - 3}{x^2 - 9}$

Identify the horizontal asymptote of each.

9) $f(x) = \dfrac{-x^3 - x^2 + 2x}{x^3 - 9x}$

Identify the x-intercepts of each.

10) $f(x) = -\dfrac{3}{x^2 - 4}$

Identify the domain of each.

11) $f(x) = \dfrac{x-1}{2x-6}$

Solve each equation.

12) $(3v - 3)^{-\frac{5}{4}} = \dfrac{1}{243}$

Expand each logarithm.

13) $\log_9 \left(uv^3\right)^6$

14) $\log_5 \left(\dfrac{u}{v^4}\right)^5$

Solve each equation. Round your answers to the nearest ten-thousandth.

15) $19^{7a} - 2 = 59.7$

Solve each equation.

16) $-9 + \log_2 n = -10$

Find a positive and a negative coterminal angle for each given angle.

17) $-180°$

In each triangle ABC, angle C is a right angle. Find the value of the trig function indicated.

18) Find $\cot A$ if $b = 3$, $c = 3\sqrt{5}$

Find the value of the trig function indicated.

19) Find $\sec \theta$ if $\tan \theta = 1$

Find the measure of each angle indicated. Round to the nearest tenth.

20)