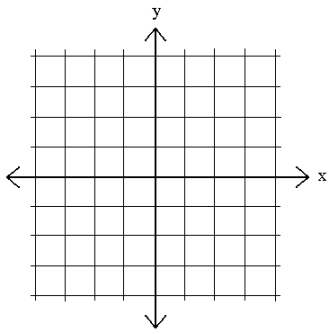
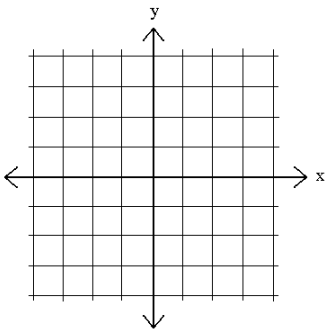
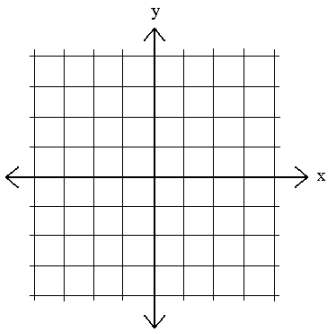
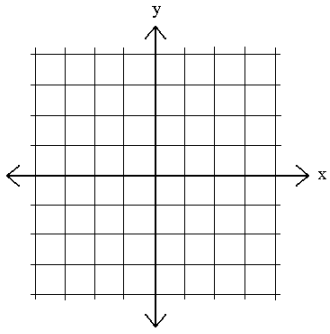
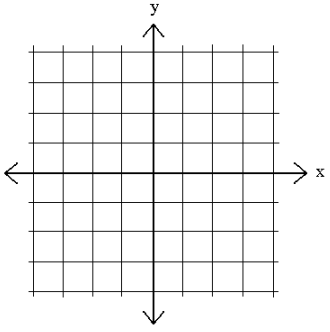
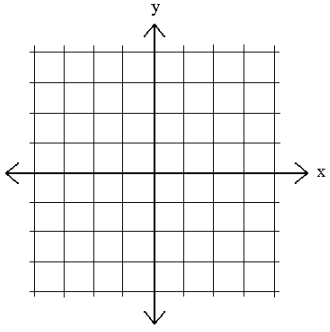
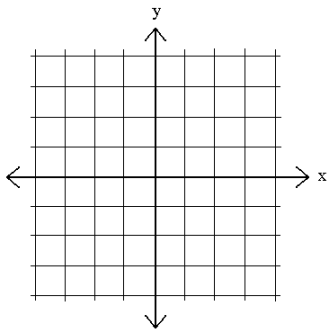
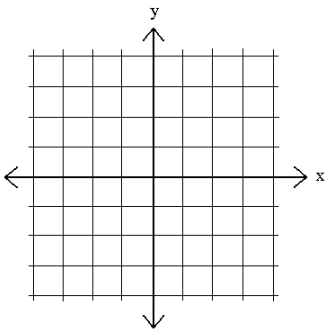
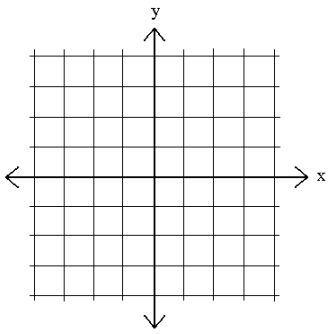
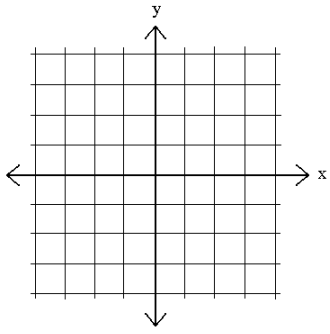
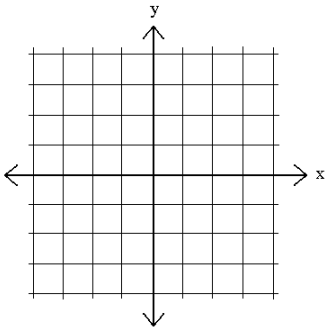
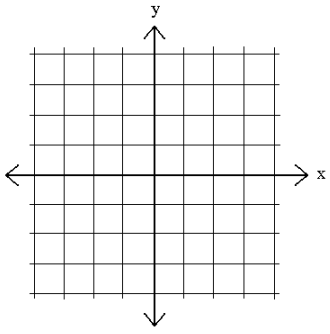
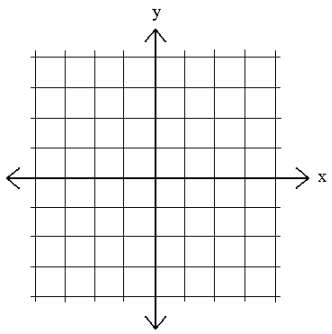
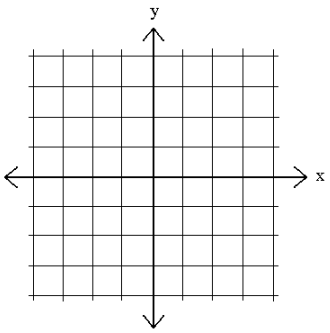
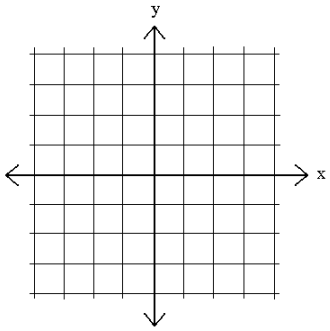
The following are skills you should have mastered in Pre-Calculus and Algebra II with Trig. Many items require a calculator. Due first day of class for a classwork quiz grade.

Chart of Basic Graphs

Sketch the graph of each and identify the requested items.

CONSTANT **y = constant**  $y = -2$ Domain Range	**LINEAR** **y = mx + b**  $y = \frac{-1}{2}x + 3$ Domain Range	**QUADRATIC** **$y = ax^2+bx+c$ $y = a(x-h)^2+k$**  $f(x) = \frac{1}{2}(x-1)^2 - 2$ Domain Range
CUBIC **$y = x^3$**  Domain Range	**RADICAL (Square Root)** **$y = \sqrt{x}$**  Domain Range	**CUBE ROOT** **$y = \sqrt[3]{x}$**  Domain Range

"SEAGULL" **$y = x^{2/3}$**  Domain Range	**ABSOLUTE VALUE** **y = |x|**  Domain Range	**GREATEST INTEGER** **y = [x] or y = [[x]]**  Domain Range
RATIONAL **y = p(x)/q(x)**  $y = \frac{x-1}{x+1}$ Domain Range	**NATURAL LOG** **y = ln x**  Domain Range	**EXPONENTIAL** **$y = e^x$**  Domain Range

Sine Function $y = \sin x$	**Cosine Function** $y = \cos x$	**Tangent Function** $y = \tan x$
		
Domain Range	Domain Range	Domain Range

Exact values of trig functions

	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\csc\theta$	$\sec\theta$	$\cot\theta$
$\theta = \frac{\pi}{6}$						
$\theta = \frac{\pi}{3}$						
$\theta = \frac{\pi}{4}$						

	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\csc\theta$	$\sec\theta$	$\cot\theta$
$\theta = 0$						
$\theta = \frac{\pi}{2}$						
$\theta = \pi$						
$\theta = \frac{3\pi}{2}$						

PIECEWISE FUNCTIONS

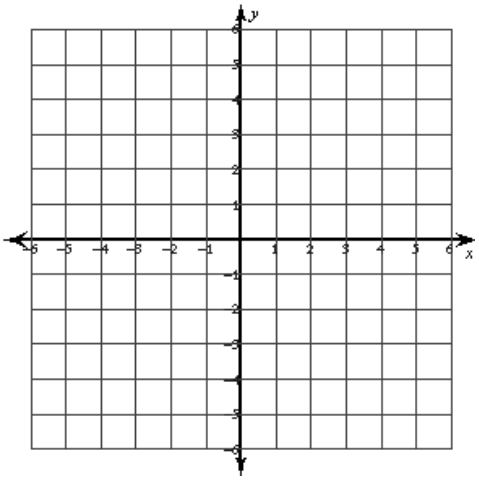
A piecewise function is a set of one or more functions defined over specified domain values. Since a piecewise function is a function, it must pass the vertical line test.

STEPS IN GRAPHING A PIECEWISE FUNCTION

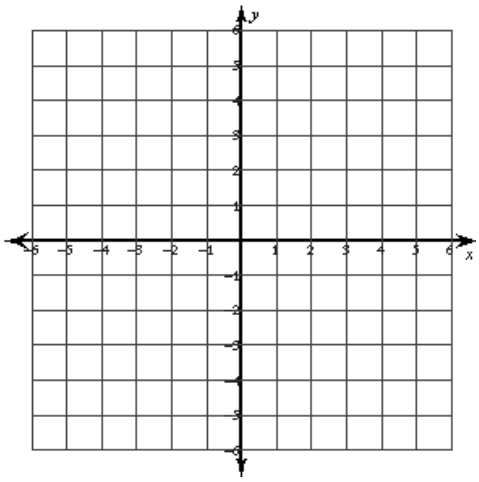
1. Make a table of values using the specified x values
2. Plot the points and decide if the major point is open (hole) or closed (regular point)
3. Check to make sure that your graph passes the vertical line test

Graph each piecewise function.

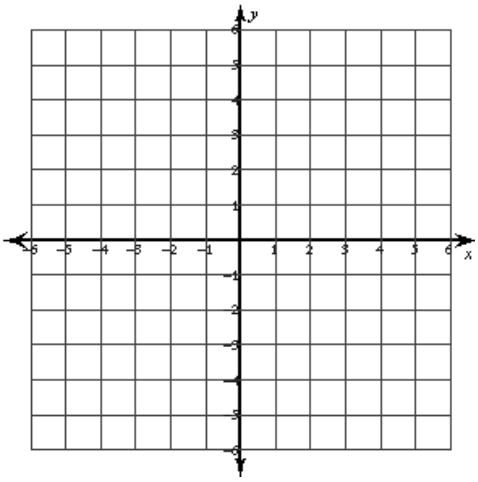
1. $f(x) = \begin{cases} -x^2 + 4, & x \leq -2 \\ \frac{3}{2}x + 3, & x > -2 \end{cases}$



2. $f(x) = \begin{cases} -\frac{1}{2}x + 1, & x \leq 2 \\ 2, & 2 < x \leq 4 \\ x, & x > 4 \end{cases}$

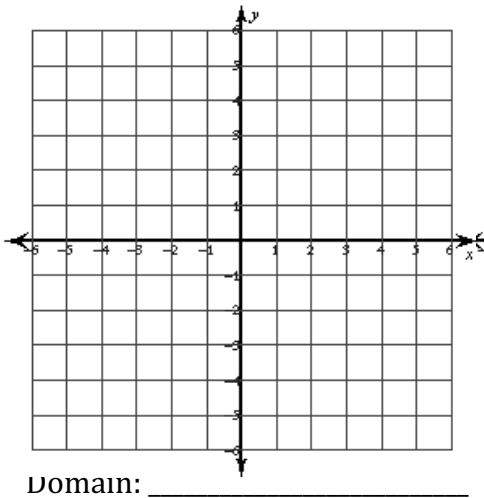


3. $f(x) = \begin{cases} x^3, & if\ x < 1 \\ -2, & if\ x = 1 \\ |x|, & if\ x > 1 \end{cases}$



Review (Graphing and Trig) Worksheet
Graph the following functions and answer the questions.

1. $f(x) = |x + 1| - 2$



Domain: _____

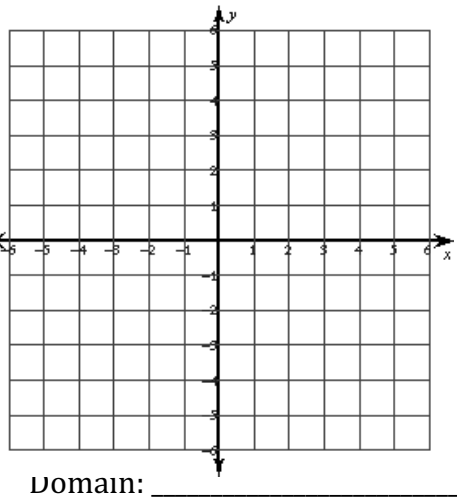
Range: _____

Vertex: _____

x-intercept: _____

y-intercept: _____

2. $f(x) = e^{-x}$

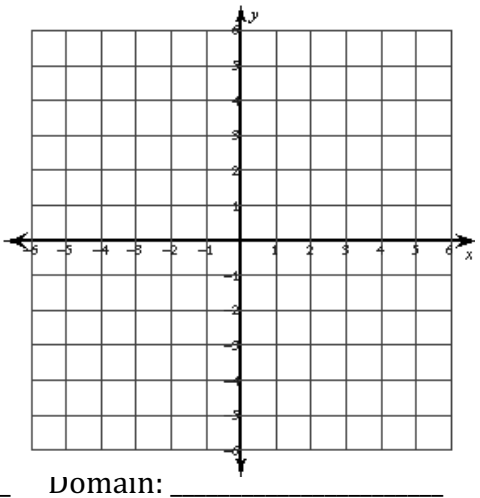


Domain: _____

Range: _____

Equation of asymptote: _____

3. $f(x) = -\ln(x)$

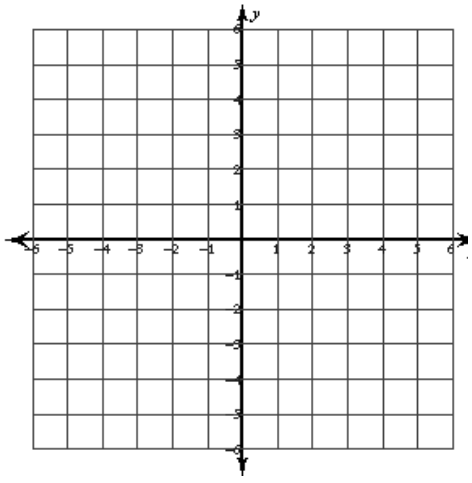


Domain: _____

Range: _____

Eq. of Asymptote: _____

4. $f(x) = -|2x - 3| + 1$



Domain: _____

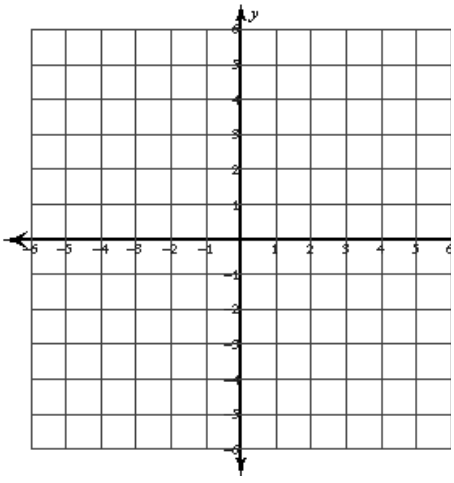
Range: _____

Vertex: _____

x-intercept: _____

y-intercept: _____

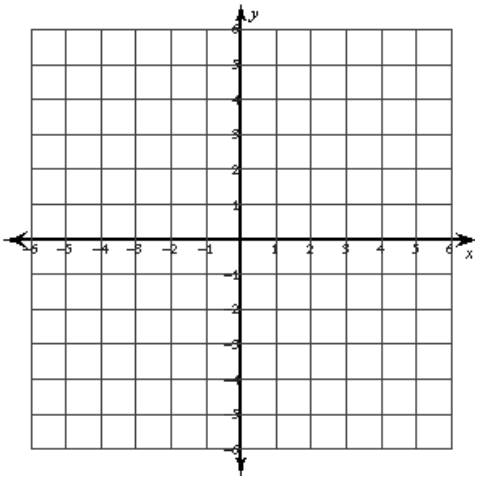
5. $f(x) = \frac{|x|}{x}$



Domain: _____

Range: _____

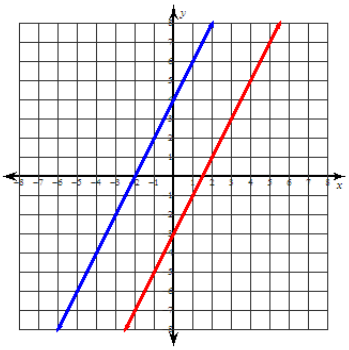
6. $f(x) = -x^{2/3}$



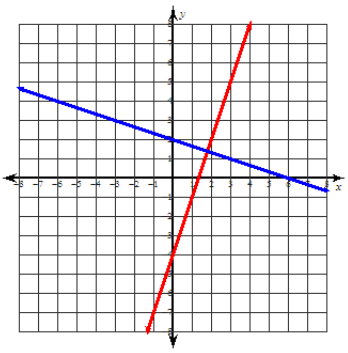
Domain: _____

Range: _____

7. The graph shows two lines that are parallel. Write the equation of each line and compare the slopes. Write a general statement about the slopes of parallel lines.



8. The graph shows two lines that are perpendicular (meet at a right angle). Write the equation of each line and compare the slopes. Write a general statement about the slopes of perpendicular lines.

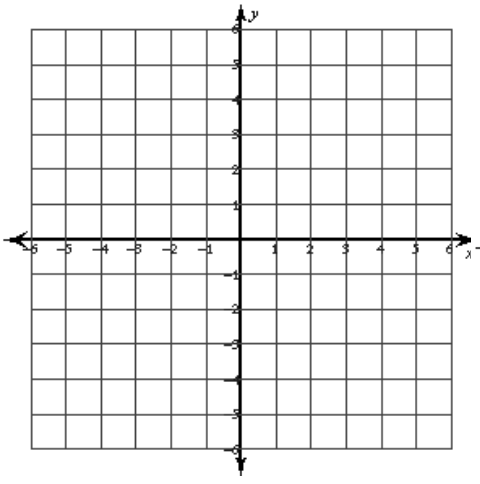


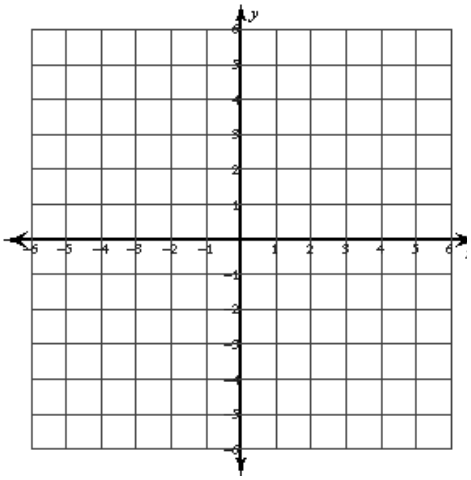
Graph the piecewise function.

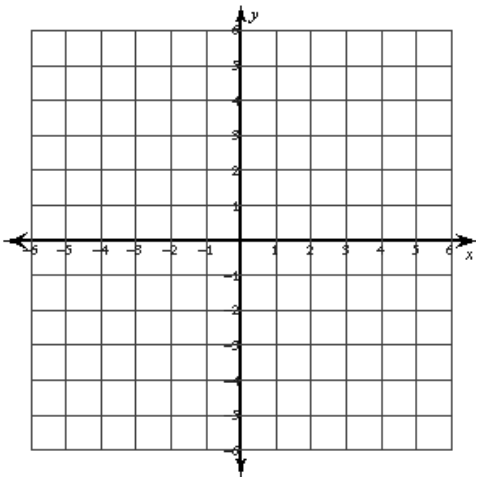
9. $f(x)=\begin{cases} e^x, & x>0 \\ -\frac{1}{2}x-2, & x\le 0 \end{cases}$

10. $h(x)=\begin{cases} x+3 & \text{if } x<-2 \\ x^2 & \text{if } -2\le x<1 \\ -x+2 & \text{if } x\ge 1 \end{cases}$

11. $g(x)=\begin{cases} \sqrt{x}, & 0<x<4 \\ -2x, & x\le 0 \\ 5, & x=4 \end{cases}$

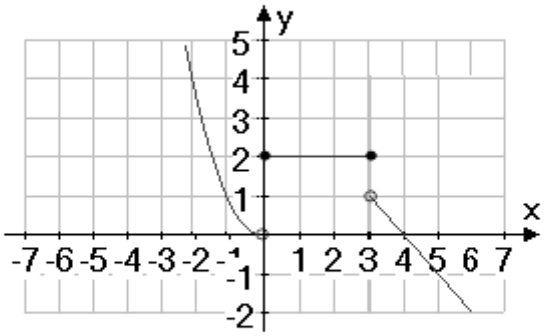




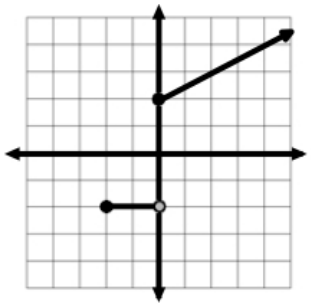


Write the equation of the piecewise function.

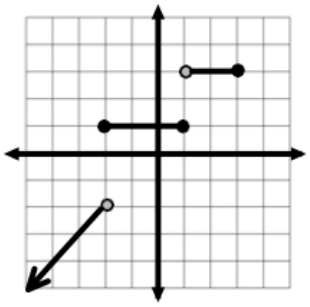
12.



13.

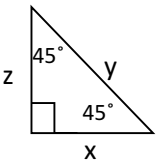


14.



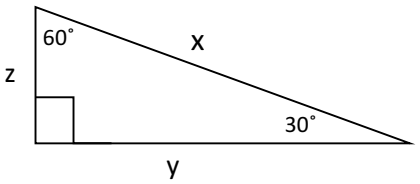
What are the sides of the following special right triangles?

15.



x = _____ y=_____ z=_____

16.



x = _____ y=_____ z=_____

Find the exact value of each trig function given the angle.

	sinθ	**cosθ**	**tanθ**	**cscθ**	**secθ**	**cotθ**
17. $\theta = \frac{\pi}{6}$						
18. $\theta = \frac{3\pi}{4}$						
19. $\theta = 0$						
20. $\theta = -\frac{\pi}{3}$						

21. Using a Graphing Calculator find the relative maxes, relative mins, and all x-intercepts to three decimal places $y = 2x^4 + x^3 - 6x^2 - 4$

22. Using a calculator determine the intersection(s) of the polynomial in Question 21 and the curve $y = e^x - 2$ to three decimal places.