

Day 1: Homework

Match each equation with its graph.

1. $y = |x - 1|$

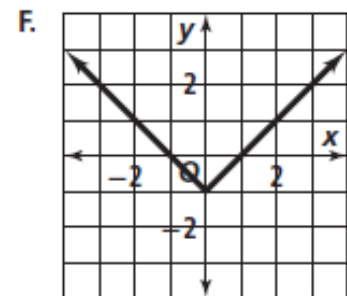
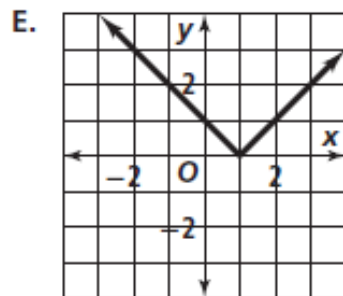
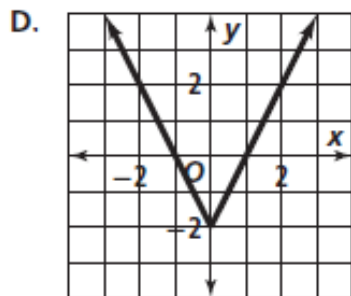
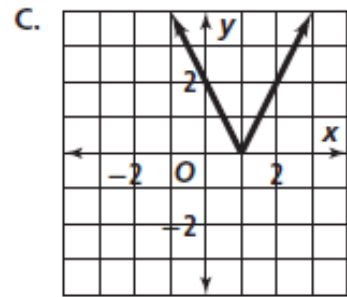
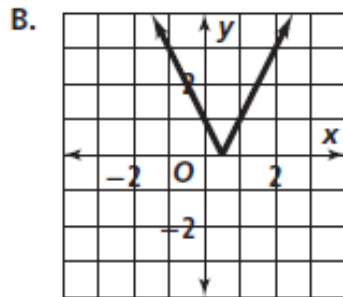
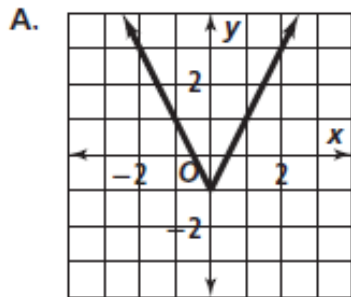
2. $y = 2|x - 1|$

3. $y = |2x| - 1$

4. $y = |x| - 1$

5. $y = |2x - 1|$

6. $y = |2x| - 2$



On graph paper, graph each absolute value equation. Also indicate the domain and range.

13. $y = |3 - x|$

14. $y = -\frac{2}{3} \left| \frac{1}{3}x \right|$

15. $y = 3 - |x + 1|$

16. $y = -|-x - 2|$

17. $3y = |2x - 9|$

18. $y = -|x| + 2$

19. $\frac{1}{2}y = |3x - 1| - 2$

20. $y + 3 = |x + 1|$

21. $-2y = |2x - 4|$

Write an equation for each translation. Also indicate the domain and range for the translation.

10. $y = |x|$, 1 unit up, 2 units left

11. $y = |x|$, 4 units right

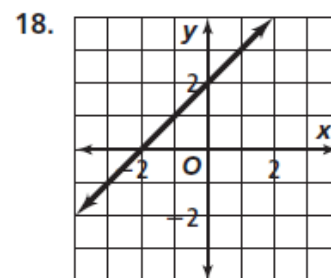
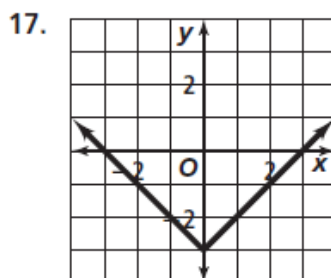
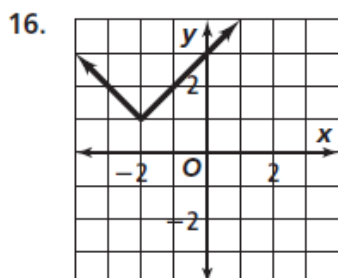
12. $y = -|x|$, 3 units up, 1 unit right

13. $y = -|x|$, $\frac{3}{2}$ units down, $\frac{1}{2}$ unit right

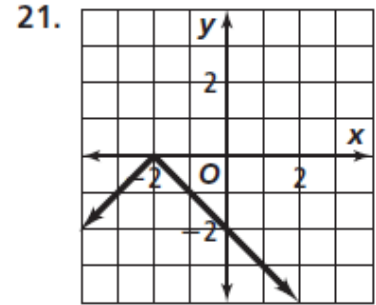
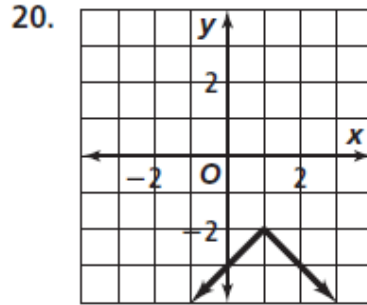
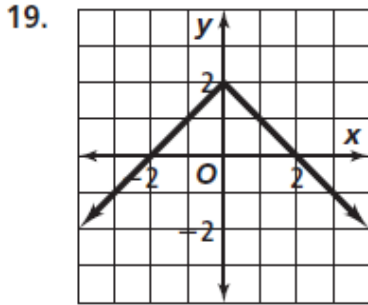
14. $y = |x|$, 2 units down, 3 units left

15. $y = -|x|$, $\frac{3}{5}$ unit up

Write the equation of each translation of $y = x$ or $y = |x|$.



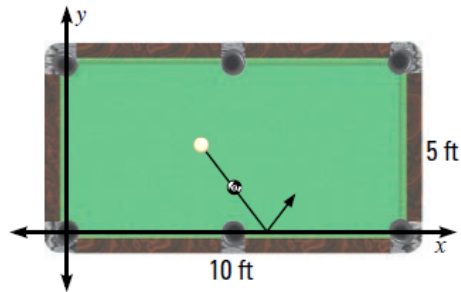
Each graph shows a translation of $y = -|x|$. State the values of h and k . Then, write an absolute value equation for the translation.



22)

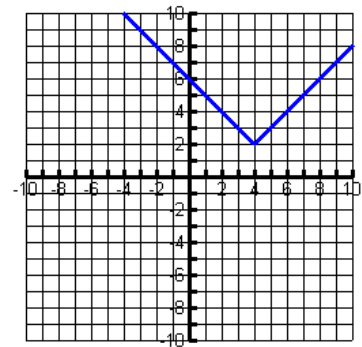
While playing pool, you try to shoot the eight ball into the corner pocket as shown. Imagine that a coordinate plane is placed over the pool table.

The eight ball is at $(5, \frac{5}{4})$ and the pocket you are aiming for is at $(10, 5)$. You are going to bank the ball off the side at $(6, 0)$.



- a. Write an equation for the path of the ball.
- b. Do you make your shot?

23) The graph shows an absolute value function after a translation 4 units up and 3 units left. Write the equation of the original function.



24.) Given $h(t) = 10^t$
Evaluate $h(t)$ if $t = 3.5$

26.) Given $f(t) = \sqrt[3]{x^t}$
Evaluate $f(12) =$

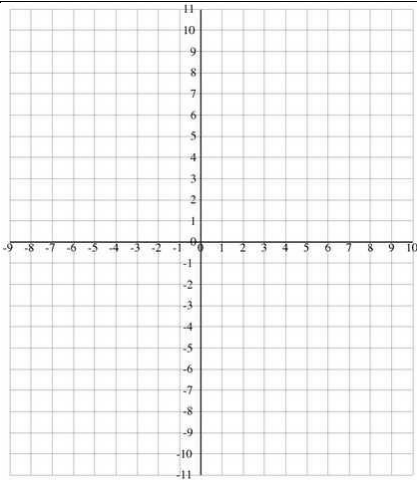
25.) Given $f(x) = 3 + \sqrt{x}$
Evaluate $f(25) =$

27.) Given $g(x) = 2x^2 - 5$
Evaluate $g(2x - 5) =$

Day 2: Homework

Sketch the graph of the functions. State the domain and range in interval notation. Then describe how the function changed from the parent graph.

1. $y = \sqrt{x+4}$

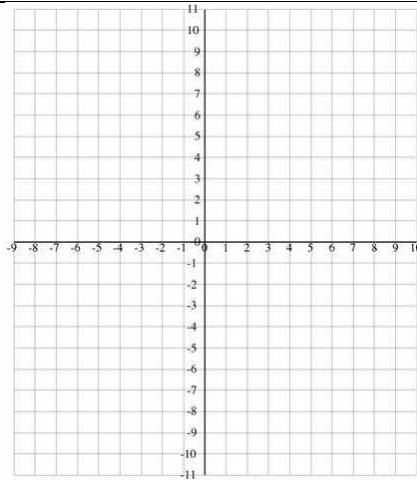


Domain: _____

Range: _____

Description:

2. $y = -\sqrt{x} - 3$

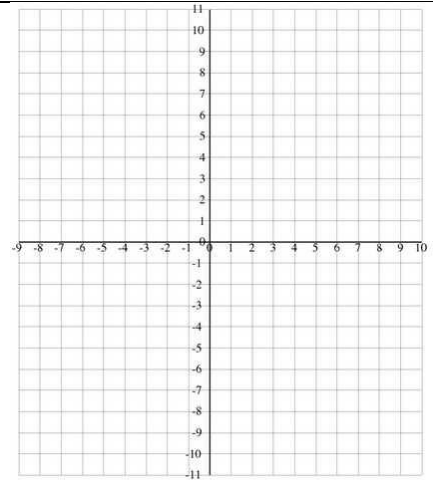


Domain: _____

Range: _____

Description:

3. $y = 3 + \sqrt{x+3}$

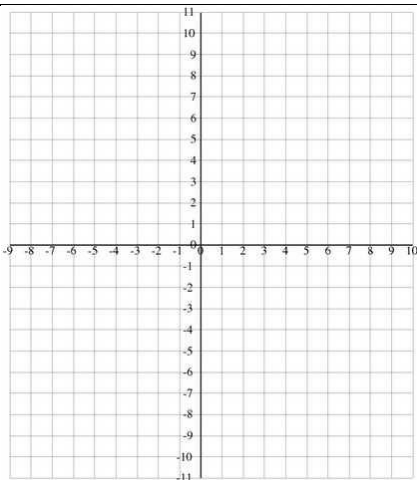


Domain: _____

Range: _____

Description:

4. $y = -\sqrt{x-1} - 3$

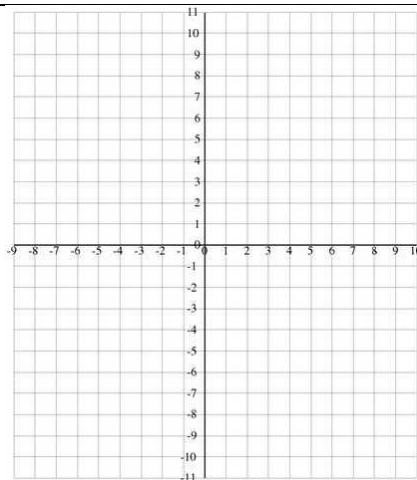


Domain: _____

Range: _____

Description:

5. $y = \sqrt{x}$

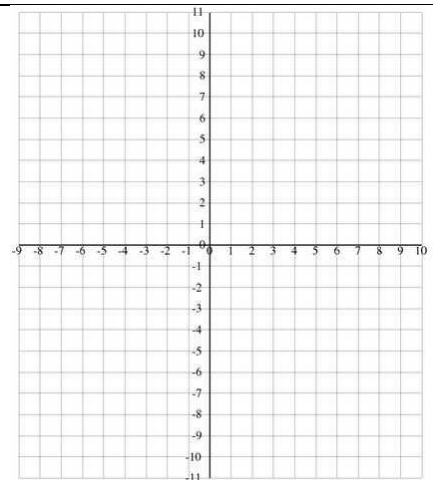


Domain: _____

Range: _____

Description:

6. $y = \sqrt{x-2} + 1$



Domain: _____

Range: _____

Description:

How would each of the following graphs change in relation to the parent graph?

a) $y = \sqrt[3]{x-3}$ _____

b) $y = \sqrt[3]{x+4}$ _____

c) $y = -3\sqrt[3]{x}$ _____

d) $y = \sqrt[3]{x} + 5$ _____

e) $y = \sqrt[3]{x} - 6$ _____

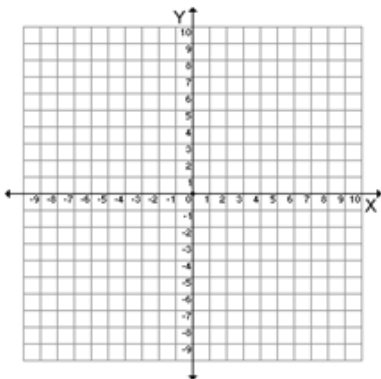
f) $y = 3\sqrt[3]{x-2} + 7$ _____

Graph the following cube root functions. Then state the domain and range in interval notation.

a) $y = -\sqrt[3]{x}$

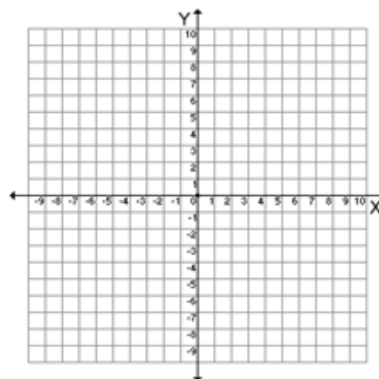
b) $y = 3\sqrt[3]{x+5}$

c) $y = \sqrt[3]{x} - 2$



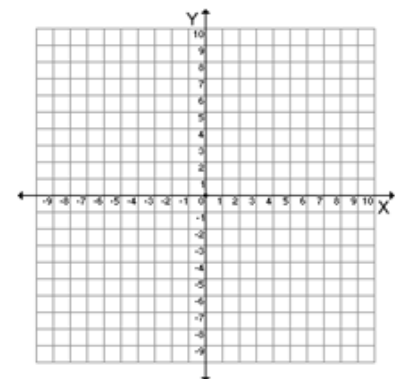
Domain: _____

Range: _____



Domain: _____

Range: _____



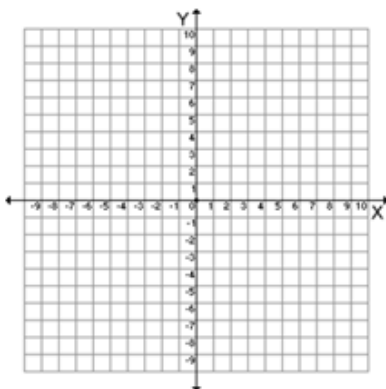
Domain: _____

Range: _____

d) $y = -\sqrt[3]{x+3}$

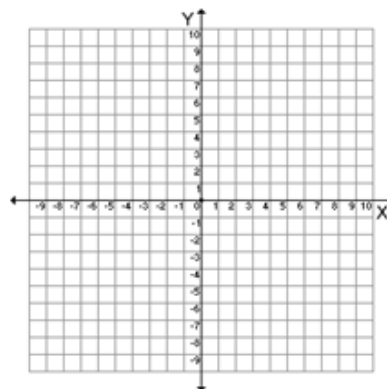
e) $y = \sqrt[3]{x+2} + 5$

f) $y = -\sqrt[3]{x+3} - 3$



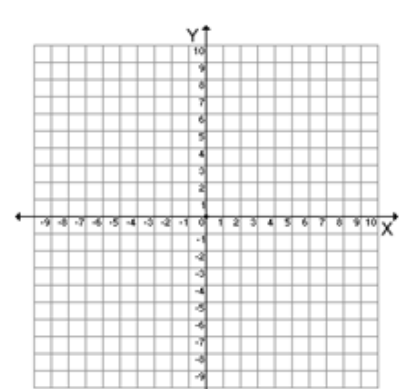
Domain: _____

Range: _____



Domain: _____

Range: _____



Domain: _____

Range: _____

Day 3: Homework

Write an equation for a translation of $y = -\frac{3}{x}$ that has the given asymptotes.

1. $x = 2; y = 1$

2. $x = -1; y = 3$

3. $x = 4; y = -2$

4. $x = 0; y = 6$

5. $x = 3; y = 0$

6. $x = 1; y = 2$

7. $x = -3; y = -1$

8. $x = -2; y = 1$

On a sheet of graph paper, graph each equation. Identify the asymptotes. Remember to also sketch the asymptotes.

9. $y = \frac{3}{x-1} + 2$

10. $y = \frac{2}{x+1}$

11. $\frac{11}{x+3} - 3$

12. $y = \frac{4}{x-2} - 2$

13. $y = \frac{1}{x} + 3$

14. $y = \frac{1}{x+1} - 2$

15. $\frac{1}{x-2} + 1$

16. $y = \frac{1}{x-1} - 1$

17. **Budgeting** A high school spends \$750 each year on student academic achievement awards. The amount spent per award depends on how many awards are given.

Write and graph a function of the number "a" of awards given and the cost "c" of each award. Find the asymptotes.

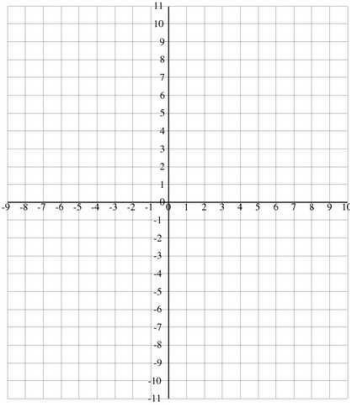
Explain how the asymptotes are related to the given facts.



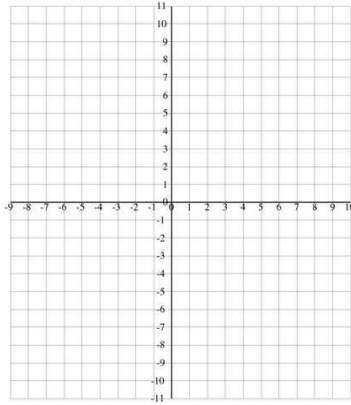
Day 4: Homework

Part 1: Use your calculator and the table function to accurately graph each of the following functions. Determine the domain, range, and key features of each of the following functions.

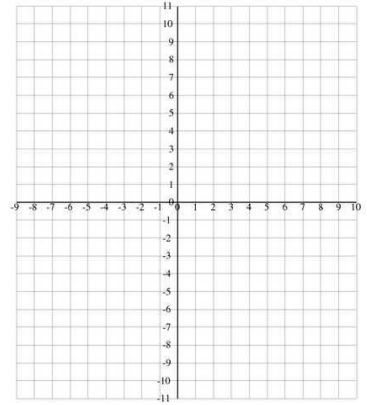
1) $y = x^2$



2) $y = \sqrt{x}$



3) $y = \frac{5}{x}$



Part 2: Carefully graph each of the following. Identify whether or not the graph is a function. Then, evaluate the graph the specified domain values. You may use your calculators to help you graph, but you must sketch it carefully on the grid! For domain and range, remember to write your answers in interval notation.

1. $f(x) = \begin{cases} x+5 & x < -2 \\ -2x-1 & x \geq -2 \end{cases}$

Function? Yes or No

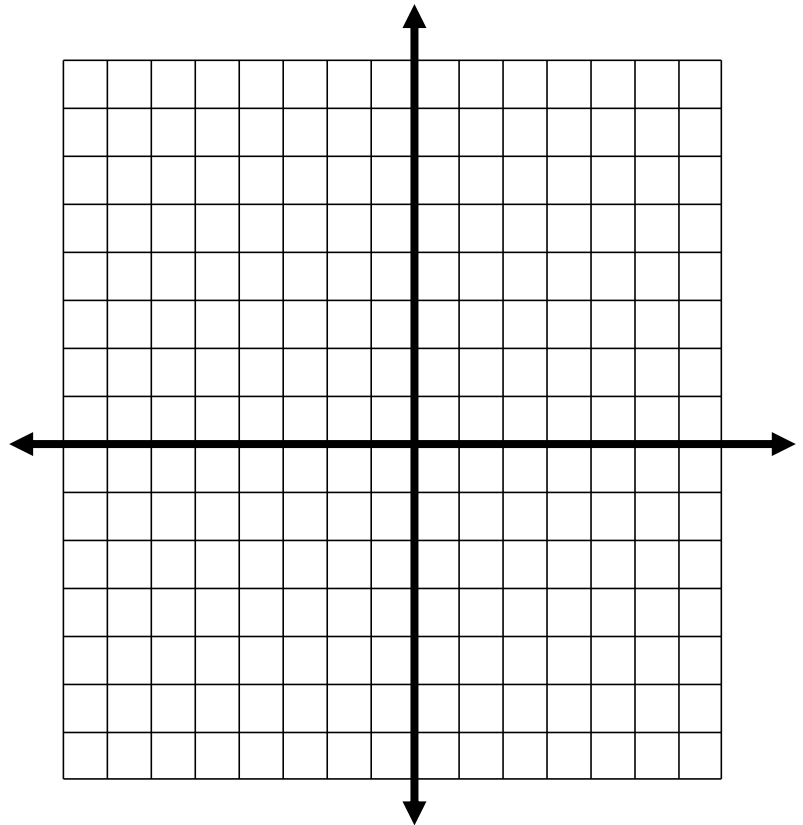
$f(3) =$

$f(-4) =$

$f(-2) =$

Domain:

Range:



2.
$$f(x) = \begin{cases} 2x+1 & x \geq 1 \\ \frac{x}{2}-3 & x < 1 \end{cases}$$

Function? Yes or No

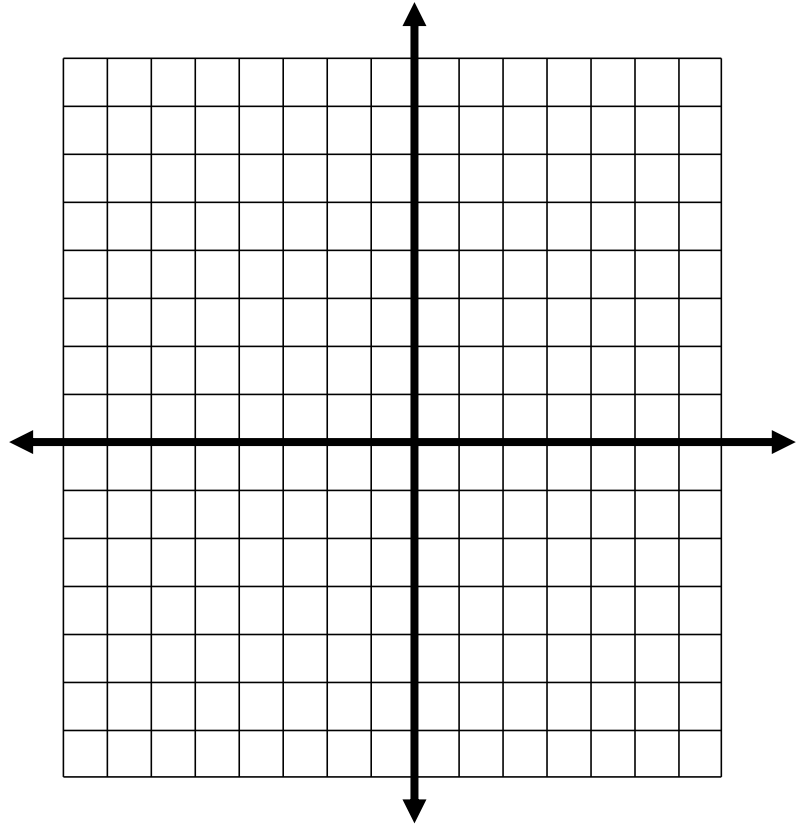
$f(-2) =$

$f(6) =$

$f(1) =$

Domain:

Range:



3.
$$f(x) = \begin{cases} 4x-2 & x \geq 2 \\ -\frac{x}{3}+4 & x < 2 \end{cases}$$

Function? Yes or No

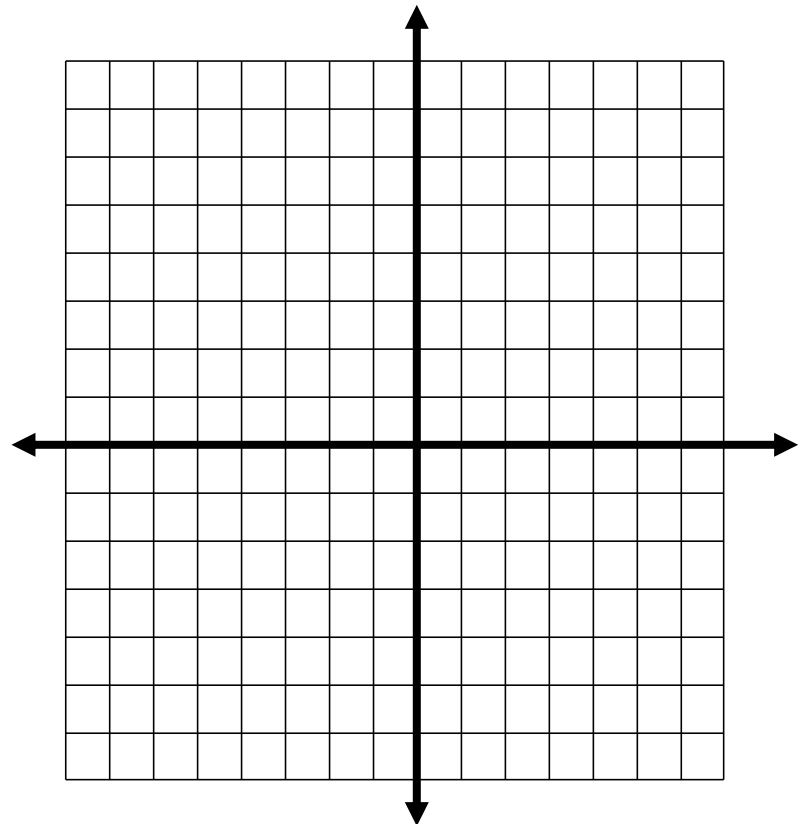
$f(-4) =$

$f(8) =$

$f(2) =$

Domain:

Range:



Day 5 Homework

$$4. \begin{cases} -x+4 & x \leq 0 \\ \frac{2x}{3}-1 & 0 < x \leq 5 \\ 2 & x > 5 \end{cases}$$

Function? Yes or No

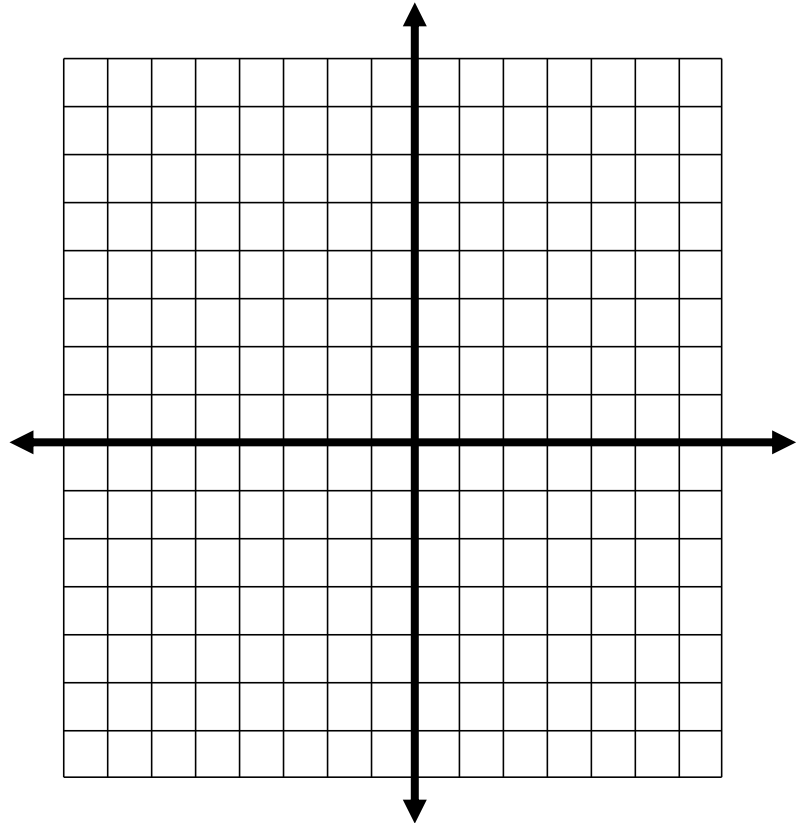
$$f(-2) =$$

$$f(0) =$$

$$f(5) =$$

Domain:

Range:



$$5. f(x) = \begin{cases} -x+1 & x \leq 0 \\ -\frac{4x}{3}-4 & x > 0 \end{cases}$$

Function? Yes or No

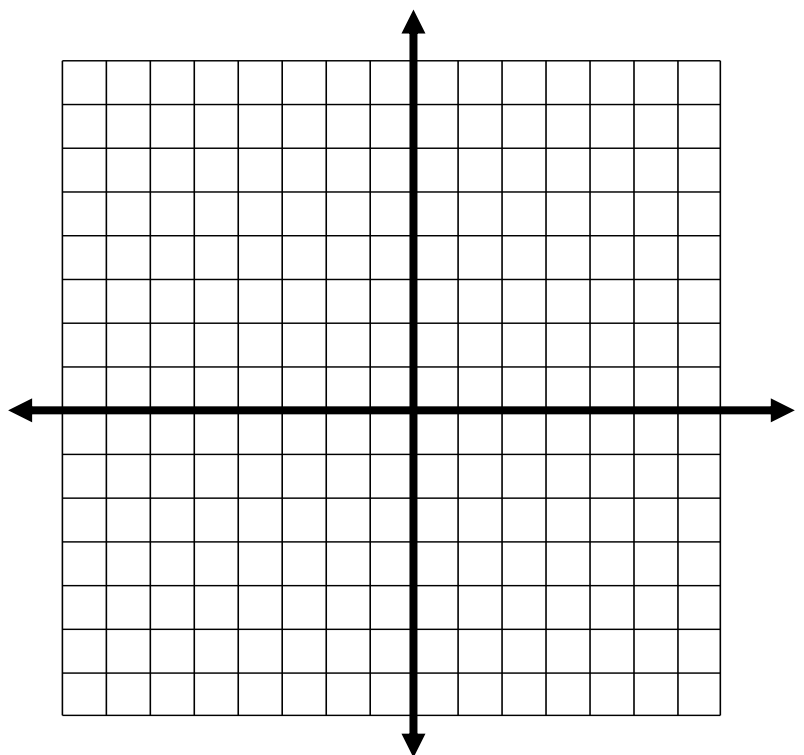
$$f(-4) =$$

$$f(0) =$$

$$f(3) =$$

Domain:

Range:



6.
$$f(x) = \begin{cases} -3 & x \leq 3 \\ 2x - 5 & x > 3 \end{cases}$$

Function? Yes or No

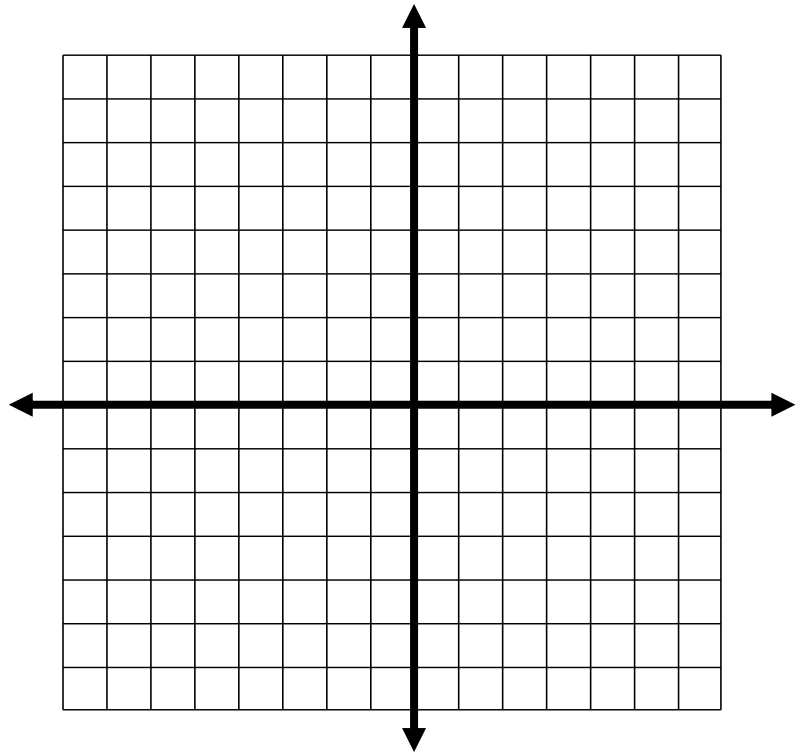
$$f(-4) =$$

$$f(0) =$$

$$f(3) =$$

Domain:

Range:



7. Evaluate the following given $f(x) = 3x - 1$, $g(x) = 5x$, and $h(x) = 2x^2 + 4$

a. $g(3) - f(2)$

b. $f(x) + 2g(x) - h(x)$

c. $h(2x - 1)$

d. $h(x - 4) - 2f(x)$

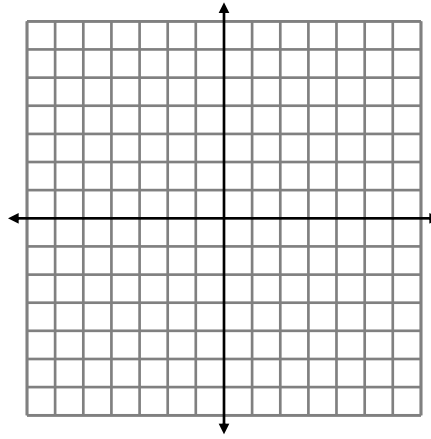
Homework Day 6

Graph each piecewise function. State the domain and range.

$$1) g(x) = \begin{cases} -x + 4 & \text{if } x \leq -2 \\ x + 1 & \text{if } x > -2 \end{cases}$$

Domain: _____

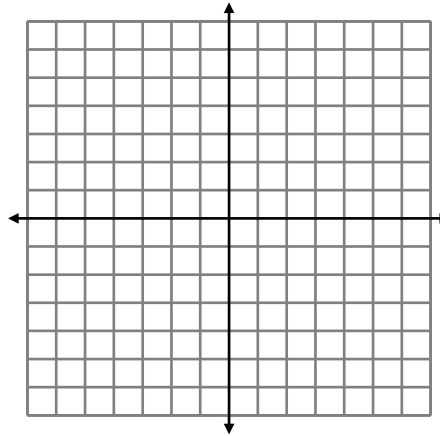
Range: _____



$$2) f(x) = \begin{cases} x^2 + 2 & \text{if } x \leq 2 \\ \frac{1}{2}x + 3 & \text{if } x > 2 \end{cases}$$

Domain: _____

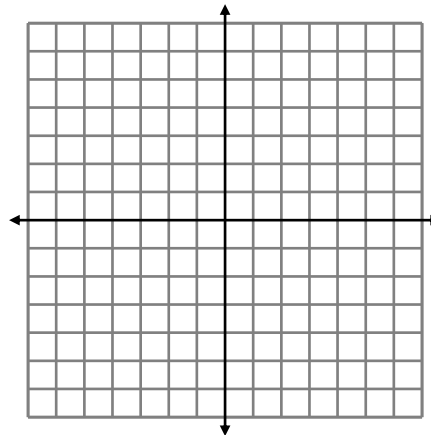
Range: _____



$$3) f(x) = \begin{cases} x & \text{if } -4 \leq x \leq -1 \\ x + 2 & \text{if } -1 < x < 4 \\ -3x + 18 & \text{if } 4 \leq x \leq 6 \end{cases}$$

Domain: _____

Range: _____



Day 7 Homework:

Evaluate the piecewise function, $m(x)$. If there is no value for the given input, write "undefined".

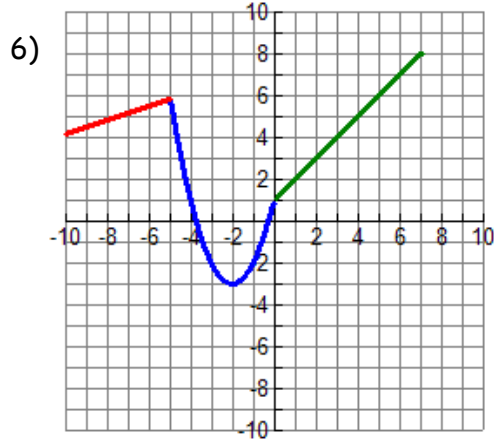
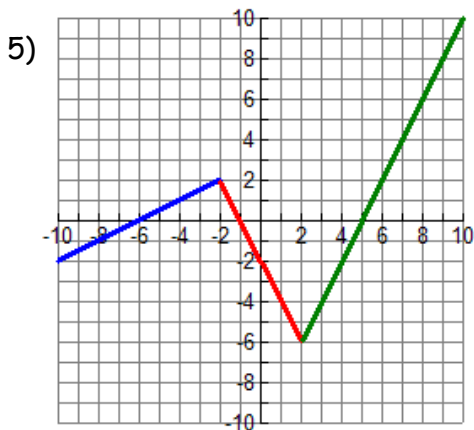
$$4) m(x) = \begin{cases} -6 & \text{if } x < 0 \\ x + 5 & \text{if } 0 \leq x \leq 12 \\ -2x + 5 & \text{if } x > 12 \end{cases}$$

a) $m(0)$

b) $m(5)$

c) $m(14)$

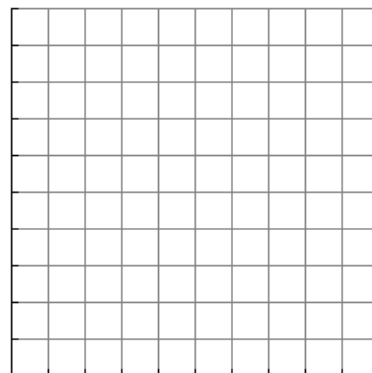
Write the piecewise functions and their restrictions for the graphs below:



7) Shelly earns \$8 an hour. She earns \$12 an hour for each hour over 40 that she works.

a) Write piecewise functions that represent the money earned by Shelly for when she works regular hours and overtime hours.

b) Sketch a graph of Shelly's earnings versus the number of hours that she works up to 60 hours. Label your axes appropriately.



c) How much money will Shelly earn if she works 70 hours in one week?

Evaluate the following given $f(x) = 3x^2 - 1$, $g(x) = 4x$, and $h(x) = 2x + 5$

6) $g(-3) - f(-2)$

9) $3f(x) + 2g(x) - h(x)$

10) $h(3x - 2)$

11) $f(x - 4) - 2f(x)$

Day 8 Homework:

For each of the following tables of data,

- Graph the points (on your own graph paper!!!).
- Find a power function that models the data.
- Determine whether the function is direct or inverse variation.
- Fill in the missing values in the table

1.

Distance of a race (miles)	0	1	2	3	4	5	8	10	13.1	26.2
Finishing Time			14.5	21.75	29		58	72.5	94.975	

Power function: _____

Direct or Inverse?

What distance was the race if the finishing time was 45.31 min? _____

2.

Time spent digging a hole (hrs)	144	72	48	36	24		16	12	9	6	2
Number of people working			3	4			9	12		24	72

Power function: _____

Direct or Inverse?

How many people were working if they spent 60 hours digging? _____

3.

Time spent at work (hours)	144	72	48	36	24	16	12	9	6	2
Pay check amount (\$)		648	432		216					

Power function: _____

Direct or Inverse?

About how long would you have to work to make \$1000? _____

For each equation, (a) draw a sketch of the graph, (b) determine the type of symmetry, (c) determine which graph it would be most similar to of x^2 , x^3 , x^{-2} , and x^{-1} , and (d) determine whether the function is even, odd, or neither.

4. $y = 5x^4$

5. $y = 3x^{-6}$

6. $y = \frac{1}{2}x^{-5}$

7. $y = 1/6x^8$

8. $y = 8x^9$

9. $y = 4(x - 3)(x + 3)$

10. $y = -2x(x + 3)$