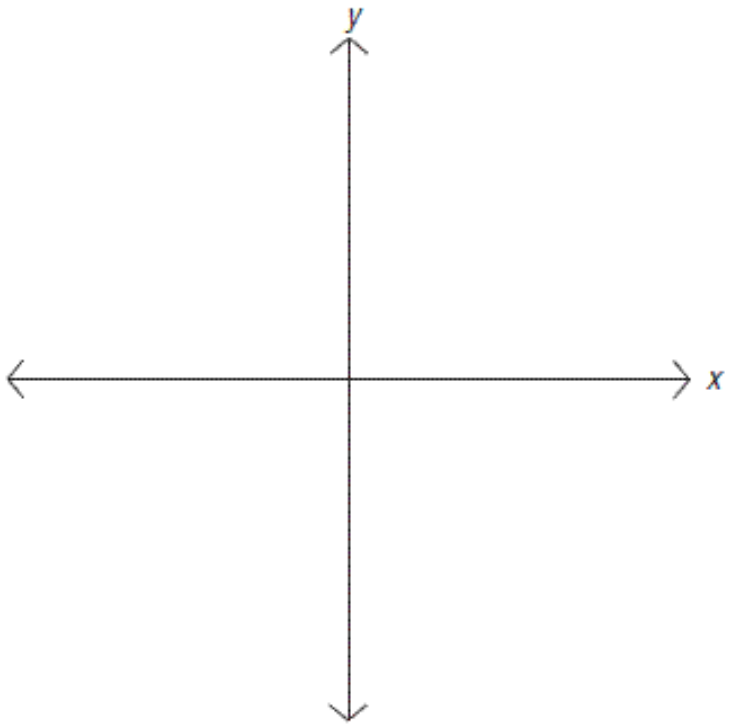
Name:_____ Date:_____

Unit 6B **Lesson 13**

Do Now:

- Reset your calculator (2^{nd} plus sign, #7, enter, #2)
- Go to y = and type in x
- What kind of function do you see? _____
- Sketch the parent function y = x below.



a. What kind of transformation do you think $y = x + 3$ will have compared to the parent function?

b. What kind of transformation do you think $y = x - 3$ will have compared to the parent function?

c. Write your own example of a linear equation that has a vertical shift.

What is a transformation?_____

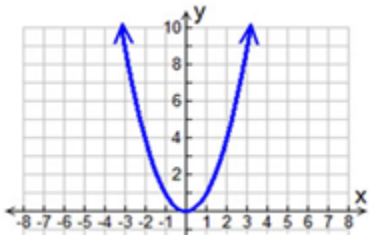
_____

AIM: TRANSFORMATIONS (DAY 1)

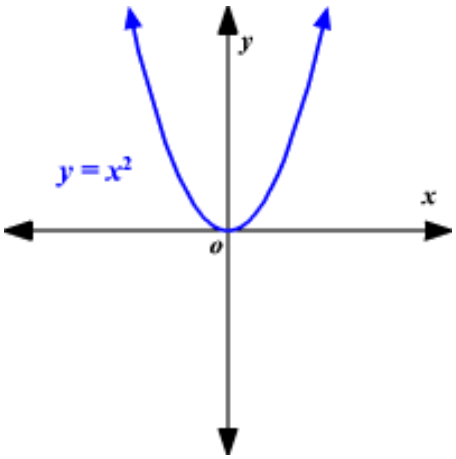
What type of function?_____

What is the parent equation?_____

Where is the vertex?_____



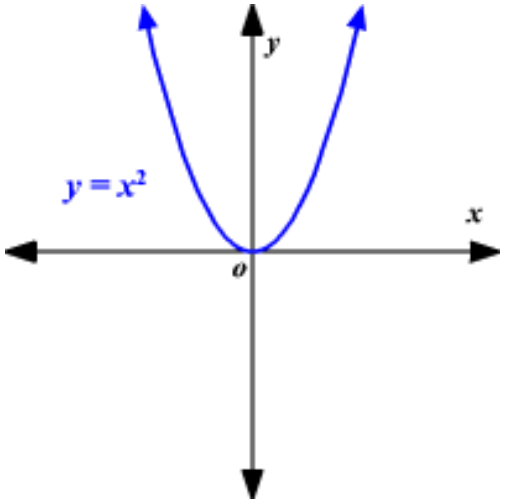
1. Sketch $h(x)=x^2+3$.



Describe how the graph of $h(x)=x^2+3$ is related to the graph of $f(x)=x^2$:_____

_____

2. Sketch $g(x)=x^2-4$.



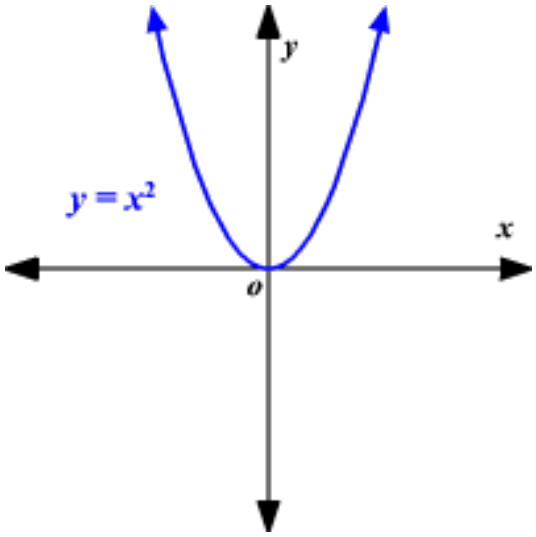
Describe how the graph of $g(x)=x^2-4$ is related to the graph of $f(x)=x^2$:_____

_____

The graph of $f(x)=x^2\pm k$ is the graph of $f(x)=x^2$ _____,

- When $k>0$ (**positive #'s**) , the graph translated _____
- When $k<0$ (**negative #'s**) , the graph translated _____

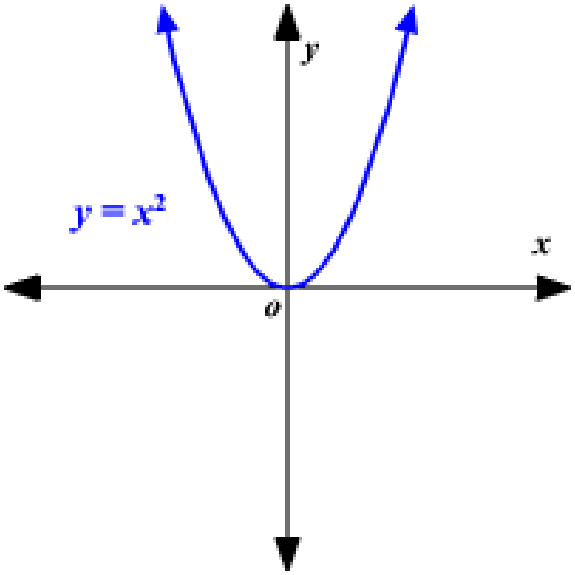
3. Sketch $k(x)=(x-2)^2$.



Describe how the graph of $k(x)=(x-2)^2$ is related to the graph of $f(x)=x^2$: _____

_____

4. Sketch $j(x)=(x+1)^2$.



Describe how the graph of $j(x)=(x+1)^2$ is related to the graph of $f(x)=x^2$: _____

_____

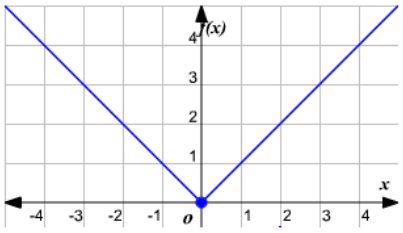
The graph of $f(x) = (x \pm h)^2$ is the graph of $f(x)=x^2$ _____,

- When h > 0 (**positive #'s**) , the graph is translated _____
- When h < 0 (**negative #'s**) , the graph is translated _____

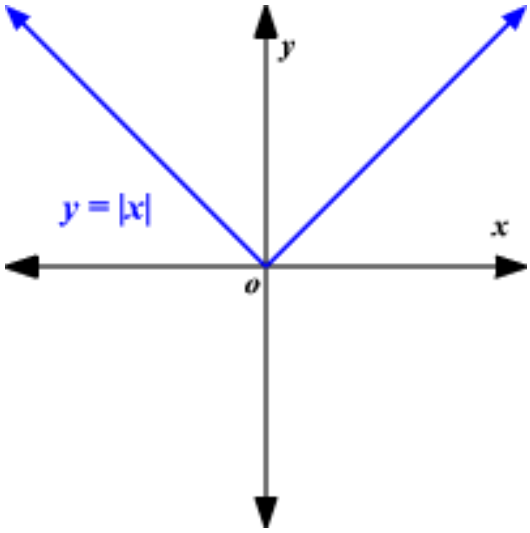
What type of function?_____

What is the parent equation?_____

Where is the vertex?_____



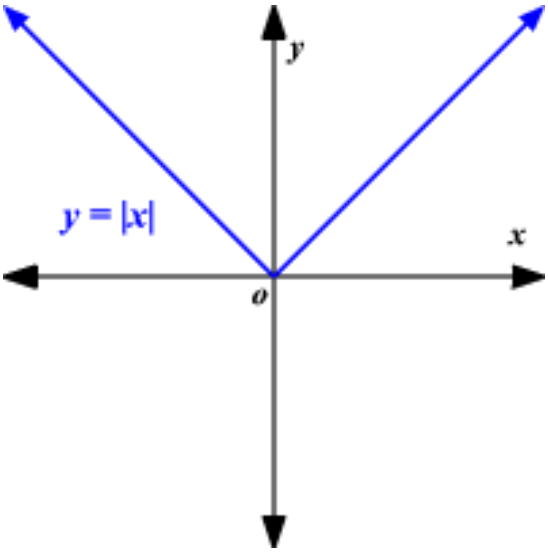
5. Sketch $y = |x| + 2$.



Describe how the graph of $y = |x| + 2$ is related to the graph of $y = |x|$:_____

_____

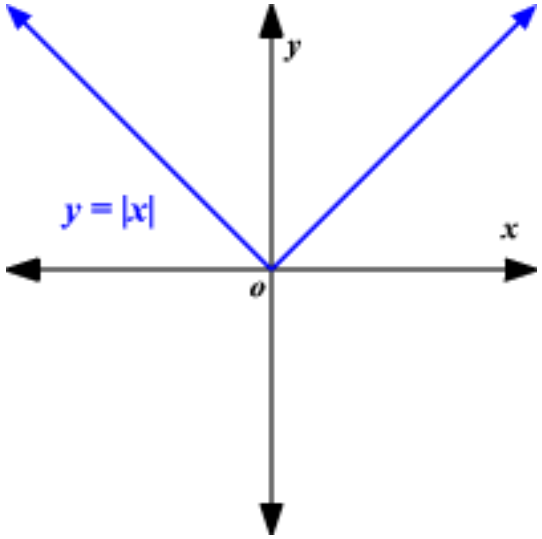
6. Sketch $y = |x| - 2$.



Describe how the graph of $y = |x| - 2$ is related to the graph of $y = |x|$:_____

_____

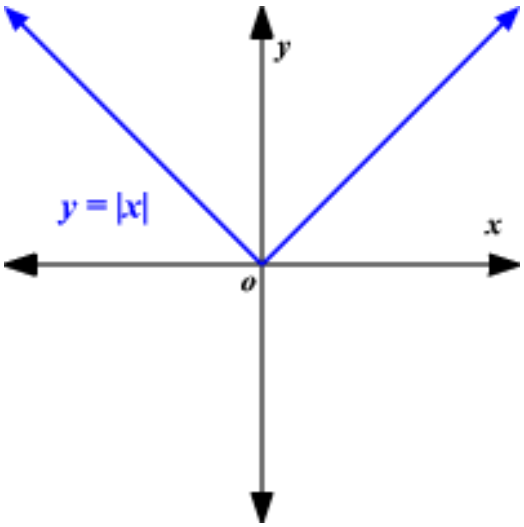
7. Sketch $y = |x+3|$.



Describe how the graph of $y = |x+3|$ is related to the graph of $y = |x|$: _____

_____

8. Sketch $y = |x-3|$.



Describe how the graph of $y = |x-3|$ is related to the graph of $y = |x|$: _____

_____

Translation (Shift) Rules for *f*(x) graph
$f(x)$ + k
$f(x)$ - k
$f(x$ + h)
$f(x$ - h)

Vertex form of a Quadratic Equation: $y = a(x-h)^2 + k$

- h represents a _____
- k represents a _____

Name:_____ Date:_____

Unit 6B **Lesson 13**

EXIT TICKET

Describe how the graph of each function is related to the graph of $f(x)=x^2$.

a) g(x) = f(x) + 10	b) $g(x)=(x-3)^2+2$	c) g(x) = f(x + 3) - 1	d) $g(x)=(x-2)^2+6$

Name:_____ Date:_____

Unit 6B **Lesson 13**

EXIT TICKET

Describe how the graph of each function is related to the graph of $f(x)=x^2$.

a) g(x) = f(x) + 10	b) $g(x)=(x-3)^2+2$	c) g(x) = f(x + 3) - 1	d) $g(x)=(x-2)^2+6$

Name:_____ Date:_____

Unit 6B **Lesson 13**

EXIT TICKET

Describe how the graph of each function is related to the graph of $f(x)=x^2$.

a) g(x) = f(x) + 10	b) $g(x)=(x-3)^2+2$	c) g(x) = f(x + 3) - 1	d) $g(x)=(x-2)^2+6$

Name:_____ Date:_____

Unit 6B **Lesson 13**

HW#_____

Describe how the graph of each function is related to the graph of $f(x)=x^2$.

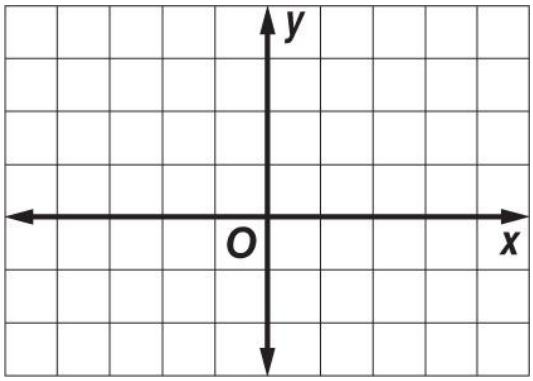
1) $g(x)=x^2-1$ 2) $g(x)=(x-6)^2$ 3) g(x) = f(x) + 20

4) $g(x)=(-2+x)^2$ 5) $g(x)=(x+1)^2-6$ 6) g(x) = f(x – 2)

6) a) Graph the set of ordered pairs: {(–3, 3), (–2, 0), (–1, –1), (0, 0), (1, 3)}.

b) Identify what type of graph it is.

*c) Write the equation of this graph.

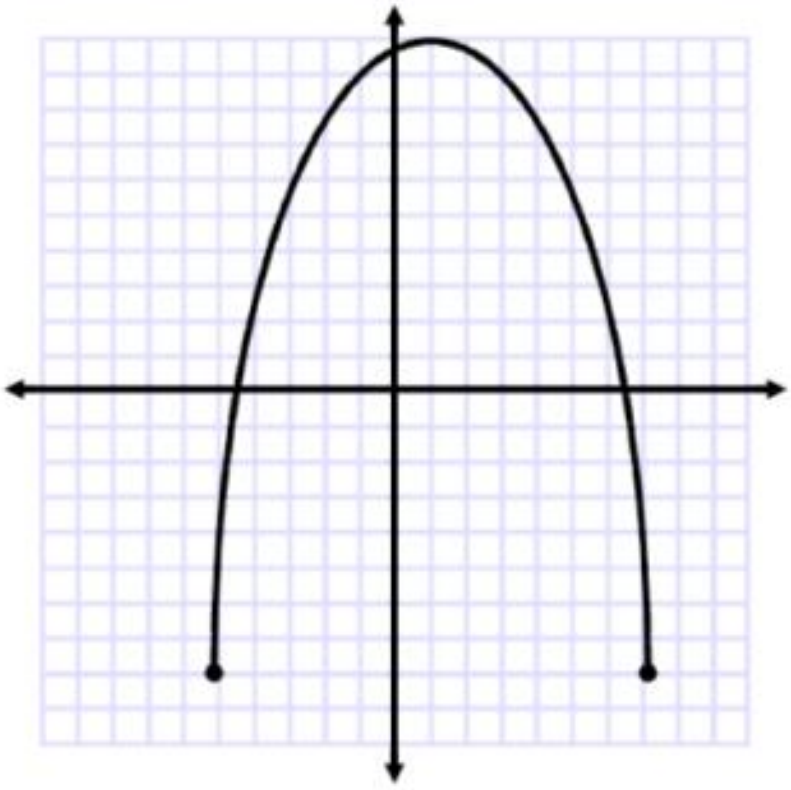


7) Which relation represents a function?

(1) {(0, 3), (2, 4), (0, 6)}
(2) {(−7, 5), (−7, 1), (−10, 3), (−4, 3)}
(3) {(2, 0), (6, 2), (6, −2)}
(4) {(−6, 5), (−3, 2), (1, 2), (6, 5)}

8) Calculate $f(-4)$ for the function: $f(x)=3x^2+4x-2$

9) Answer the following questions based on the accompanying graph.



a. Is it a function? Explain why or why not.

b. State the ***domain*** in:
Set builder notation:

Interval notation:

c. State the ***range*** in:
Set builder notation:

Interval notation:

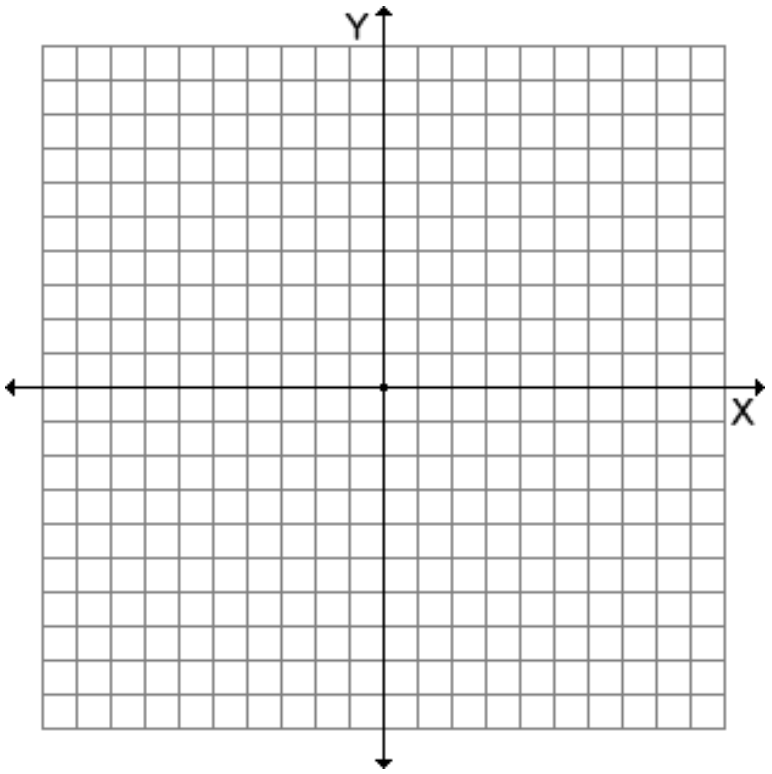
d. Find $f(3)$

e. Find x if $f(x) = 2$

10) Graph $f(x) = \begin{cases} 2 & -5 < x < 6 \\ x & 6 \le x \le 10 \end{cases}$

x	*y*
-5	
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	
5	
6	

x	*y*
6	
7	
8	
9	
10	



Domain:
Set-builder:_____

Interval notation:_____

Range:
Set-builder:_____

Interval notation:_____

DON'T FORGET TEXTBOOK!!

https://www.geogebra.org/m/eWquPsFu