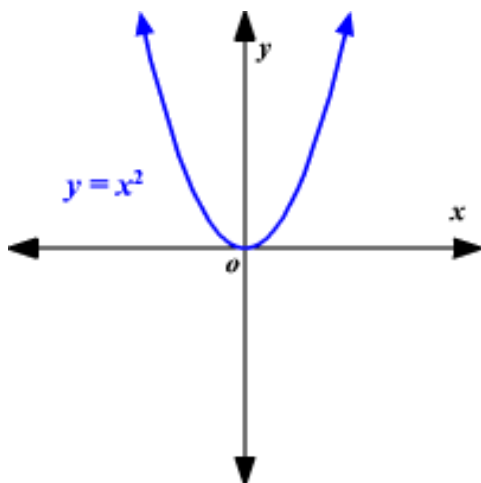


**Do Now:** Describe how the graph of  $g(x)=(x+2)^2+3$  is related to the graph of  $f(x)=x^2$ .

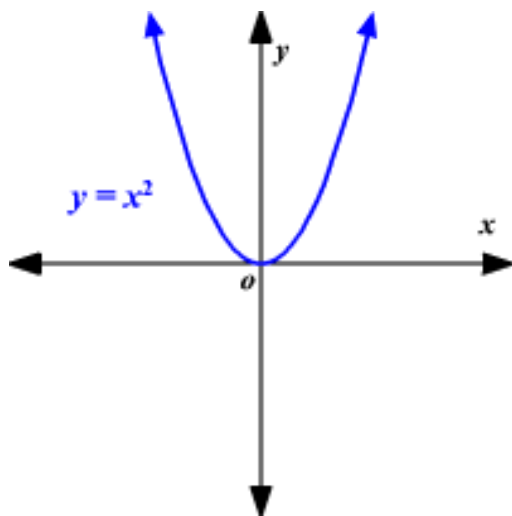
### AIM: TRANSFORMATIONS (DAY 2)

1. Sketch  $h(x)=\frac{1}{2}x^2$ .



Describe how the graph of  $h(x)=\frac{1}{2}x^2$  is related to the graph of  $f(x)=x^2$ : \_\_\_\_\_

2. Sketch  $g(x)=3x^2$ .



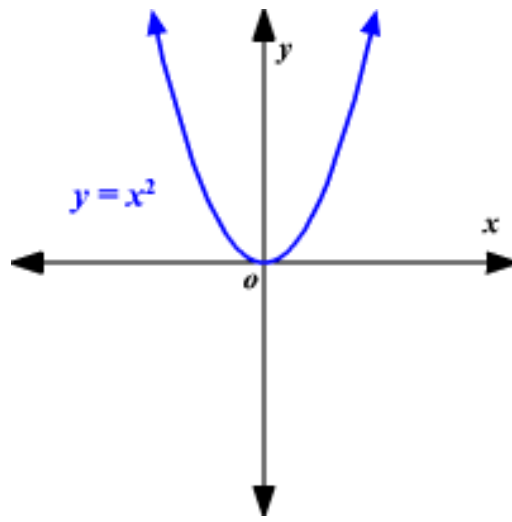
Describe how the graph of  $g(x)=3x^2$  is related to the graph of  $f(x)=x^2$ : \_\_\_\_\_

The graph of  $f(x)=ax^2$  is the graph of  $f(x)=x^2$  \_\_\_\_\_.

When  $a > 1$  (**positive #'s**), \_\_\_\_\_

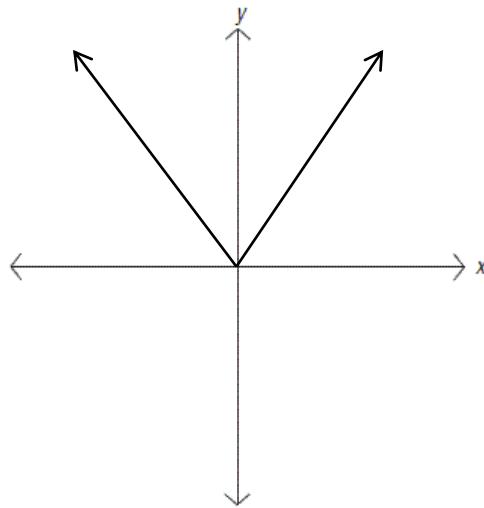
When  $0 < a < 1$  (**positive decimals or fraction #'s**), \_\_\_\_\_

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



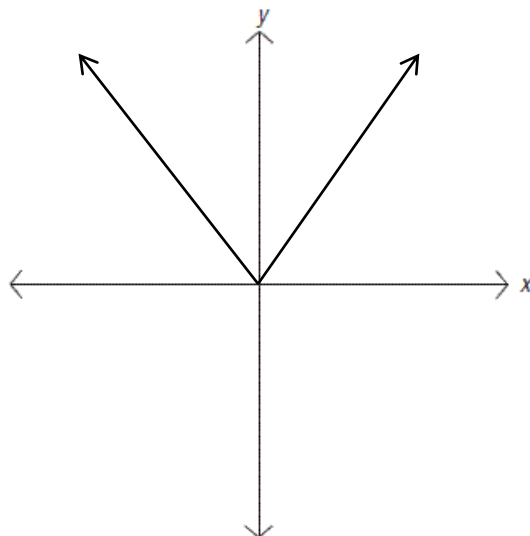
Describe how the graph of  $j(x) = -x^2$  is related to the graph of  $f(x) = x^2$ : \_\_\_\_\_

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



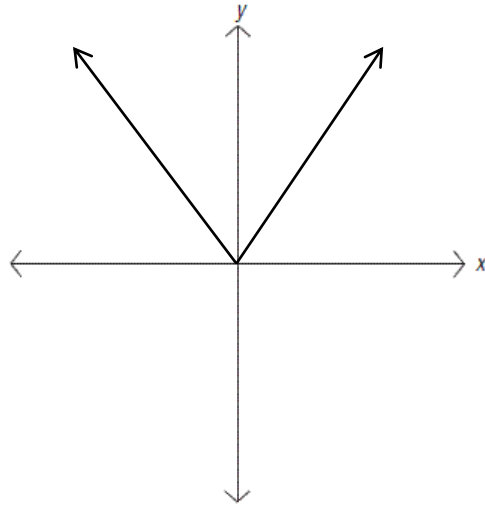
Describe how the graph of  $g(x) = -|x| - 2$  is related to the graph of  $y = |x|$ : \_\_\_\_\_

5. Sketch  $h(x) = .5|x| + 1$ .



Describe how the graph of  $h(x) = .5|x| + 1$  is related to the graph of  $y = |x|$ : \_\_\_\_\_

6. Sketch  $j(x) = 3|x-1|$ .



Describe how the graph of  $j(x) = 3|x-1|$  is related to the graph of  $y=|x|$ : \_\_\_\_\_

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

a)  $g(x) = -3x^2 + 1$

b)  $g(x) = \frac{1}{5}(x - 7)^2$

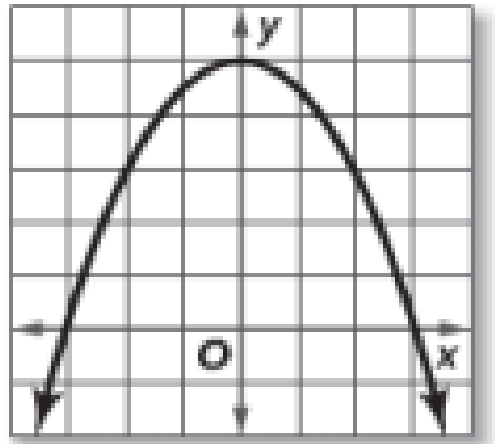
8. Which is an equation for the function shown in the graph?

(1)  $y = \frac{1}{2}x^2 - 5$

(2)  $y = -2x^2 - 5$

(3)  $y = -\frac{1}{2}x^2 + 5$

(4)  $y = 2x^2 + 5$



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

1)  $g(x) = 2x^2 + 2$

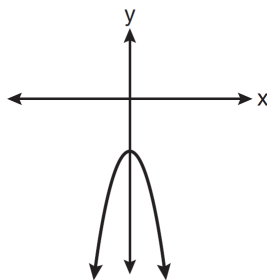
2)  $g(x) = -\frac{3}{4}x^2 - \frac{1}{2}$

3)  $g(x) = -3(x+4)^2$

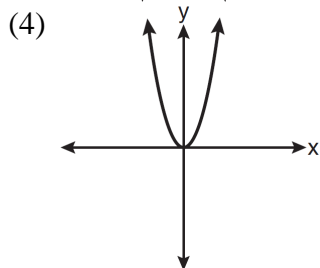
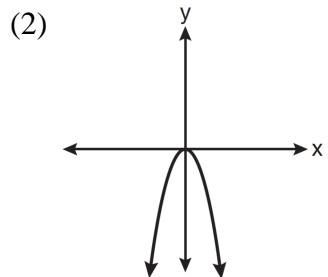
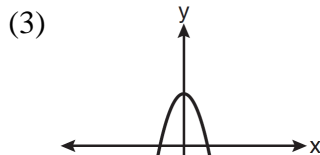
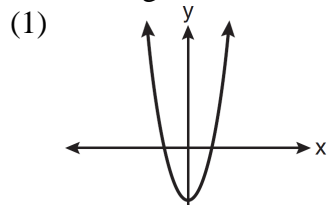
4) List the functions in order from the most vertically stretched to the least vertically stretched graph.

$f(x) = 3x^2$ ,  $g(x) = \frac{1}{2}x^2$ ,  $h(x) = -2x^2$

5) The diagram below shows the graph of  $y = -x^2 - c$ .

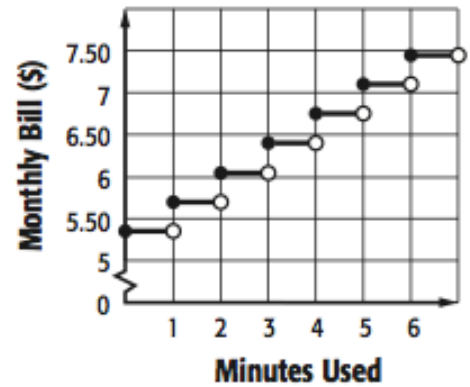


Which diagram shows the graph of  $y = x^2 - c$ ?



- 6) **CELL PHONES** Jacob's cell phone service costs \$5 each month plus \$0.35 for each minute he uses. Every fraction of a minute is rounded up to the next minute.

Write the domain and range in words.



- 7) Given  $h(x) = -2x^2 - x + 2$ , find  $h(-2)$ .

- 8) Answer the following questions based on the accompanying graph.

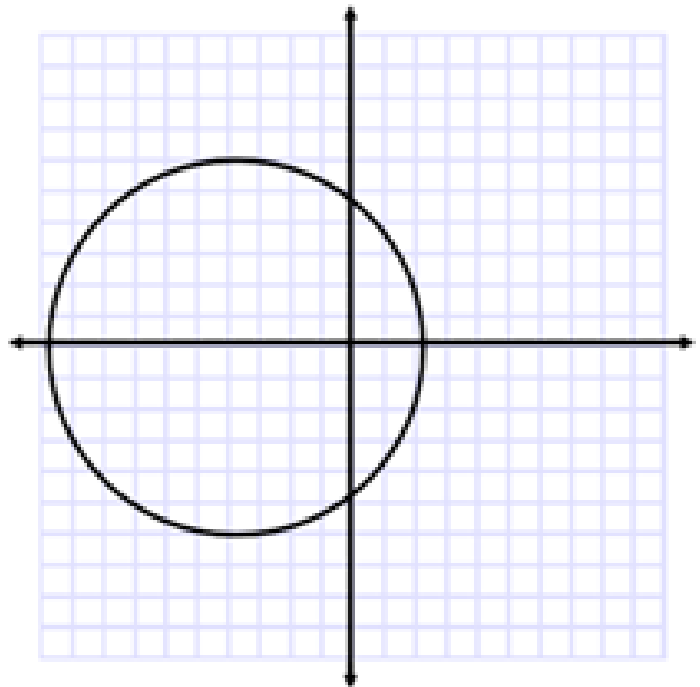
a. Is it a function? Explain why or why not.

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

interval notation:

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

interval notation:



d. Find  $f(-4)$

e. Find  $x$  if  $f(x) = 0$

**DON'T FORGET TEXTBOOK !!**

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