

Algebra 1 Practice Test #1
Function Transformations

Name _____

Teacher _____

Block _____

NO GRAPHING CALCULATORS

1. Use the Parent function and Function 2 to choose the best statement comparing the graphs to each other.

Parent Function: $y = \frac{1}{5}x^2$

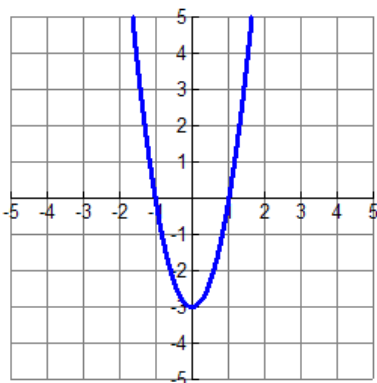
Function 2: $y = \frac{1}{5}x^2 + 7$

- A. Function 2's graph is shifted down 7 units from the Parent Function's graph.
- B. Function 2's graph is shifted up 7 units from the Parent Function's graph.
- C. Function 2's graph is shifted left 7 units from the Parent Function's graph.
- D. Function 2's graph is shifted right 7 units from the Parent Function's graph.

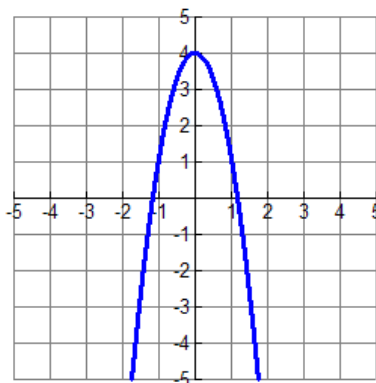
2. Given $y = 2x + 7$, write an equation whose graph is shifted 3 units to the right.

3. The equation $y = 3x^2 - 3$ is graphed below on **Graph A**. What is the equation graphed on **Graph B**?

Graph A



Graph B



Equation of function in **Graph B** _____

4. Use the two given functions to choose the best statement comparing the graphs to each other.

Function 1: $y = 2^x + 4$

Function 2: $y = 2^{x+5} - 2$

- A. Function 2's graph is shifted up 6 units and right 5 units from Function 1's graph.
- B. Function 2's graph is shifted up 5 units and down 2 units from Function 1's graph.
- C. Function 2's graph is shifted right 5 units and down 6 units from Function 1's graph.
- D. Function 2's graph is shifted left 5 units and down 6 units from Function 1's graph.

5. Given $y = 2|x| + 5$, write an equation whose graph is reflected, shifted to the left 2 units and shifted up 4 units.

6. Use the two given functions to describe the horizontal and vertical shifts from the graph of Function 1 to the graph of Function 2.

Function 1: $y = (x - 3)^2 + 1$

Function 2: $y = (x + 2)^2 - 3$

Describe:

Now write an equation for Function 3 whose graph is *only* shifted right 2 units and up 3 units from Function 2's graph.

7. Given $y = 3x - 7$, write an equation whose graph is reflected and more steep.

8. Use the two given functions to choose the best statement comparing the graphs to each other.

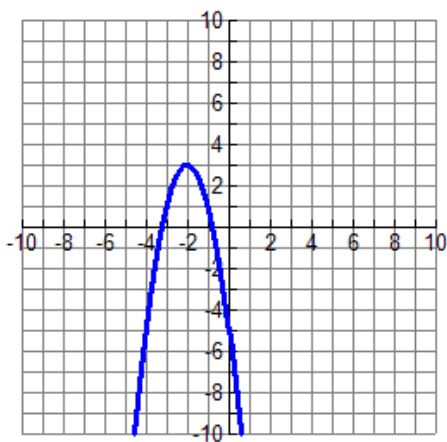
Function 1: $y = 3(x - 4)^2$

Function 2: $y = \frac{3}{4}(x - 4)^2$

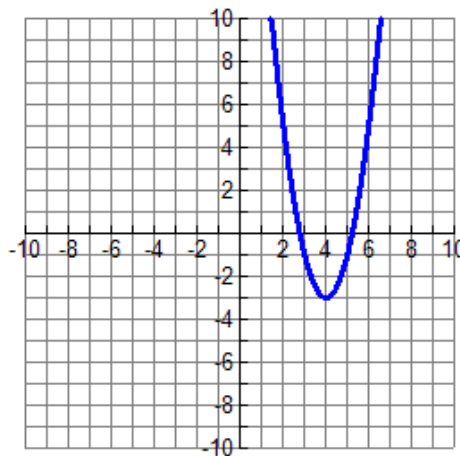
- A. Function 2's graph is *less* steep (wider) than Function 1's graph and *is* reflected.
- B. Function 2's graph is *more* steep (narrower) than Function 1's graph and *is* reflected.
- C. Function 2's graph is *less* steep (wider) than Function 1's graph and *is not* reflected.
- D. Function 2's graph is *more* steep (narrower) than Function 1's graph and *is not* reflected.

9. The equation $y = -2(x + 2)^2 + 3$ is graphed below on **Graph A**. What is the equation graphed on **Graph B**?

Graph A



Graph B



Equation of function in **Graph B** _____

10. Use the two given functions to describe the horizontal and vertical shifts from the graph of Function 1 to the graph of Function 2.

Function 1: $y = 3(x - 5) + 1$

Function 2: $y = -1(x + 2) - 2$

Describe:

Now write an equation for Function 3 whose graph is shifted right 1 unit and down 2 units from Function 2's graph, and is reflected

11. Use the two given functions to choose the best statement comparing the graphs to each other.

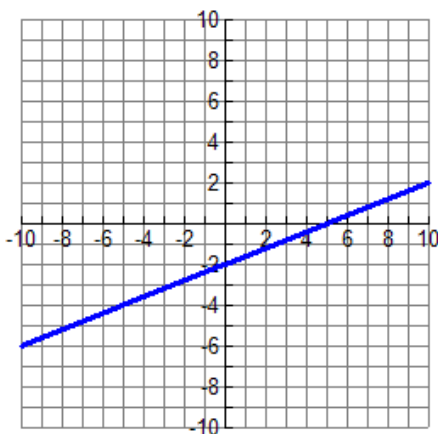
Function 1: $y = 3^{x+4} + 2$

Function 2: $y = -3^x - 3$

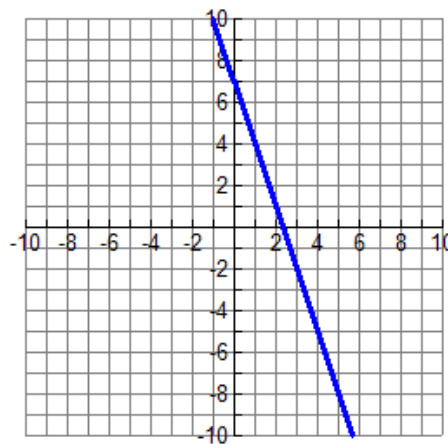
- A. Function 2's graph is shifted down 5 units, shifted right 4 units from Function 1's graph and *is* reflected.
- B. Function 2's graph is shifted up 5 units, shifted left 2 units from Function 1's graph and *is* reflected.
- C. Function 2's graph is shifted down 4 units, shifted right 5 units from Function 1's graph and *is* reflected.
- D. Function 2's graph is shifted down 4 units, shifted left 5 units from Function 1's graph and *is not* reflected.

12. The equation $y = \frac{2}{5}x - 2$ is graphed below on **Graph A** and has been transformed on **Graph B**?

Graph A



Graph B



Use the two given graphs to choose the best statement comparing the graphs to each other.

- A. Graph B is reflected and is more steep than Graph A.
- B. Graph B is not reflected and is more steep than Graph A.
- C. Graph B is reflected and is less steep than Graph A.
- D. Graph B is not reflected and is less steep than Graph A.

13. Given $f(x) = 2^x$, write an equation whose graph is shifted to the right 5 units is reflected.