

Name _____ Period _____ Date _____

NON-CALCULATOR SECTION

Vocabulary: Define each word and give an example.

1. Composite function
2. Transformation
3. Piecewise function

Short Answer:

4. Explain how to apply the horizontal line test. What can you conclude if a function passes the test?
5. How does the constant k affect the graph of $f(x)$ in the function $f(x) + k$?
6. How is the inverse of a relation related to the relation?

Review:

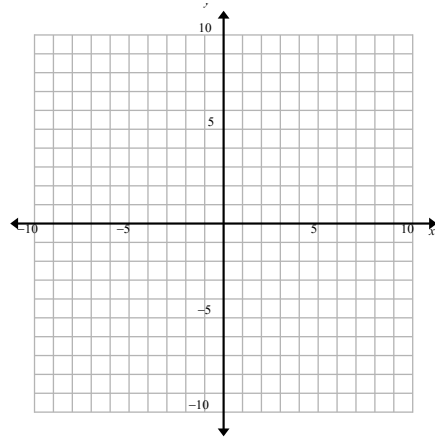
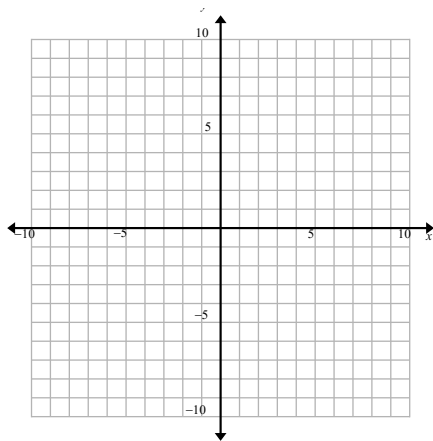
7. Solve the equation for x . $a(x + b) = c$
8. Let $f(x) = 2x - 5$ and $g(x) = -8x + 12$. Find $f(x) - g(x)$.
9. Evaluate $-2x + 9$ for $x = -1$.
10. Is $y = x^2 - 5$ a function? Explain.
11. What is the domain of the relation? $\{(-3, 4), (0, 7), (1, 9), (1, 12)\}$

****Be sure to show all work used to obtain your answer. Circle or box in the final answer.****

1. A point on the graph of $y = f(x)$ is $(-1, 2)$. State what this point will become in the graph of $y = f(-x)$.
2. The graph of $y = f(x)$ is reflected in the x -axis, is shifted 3 units down and 2 units left. The equation of the transformation is:
3. Describe the sequence of transformations used to graph the functions. Then, graph the function.

a) $y = -(x-4)^2 + 3$

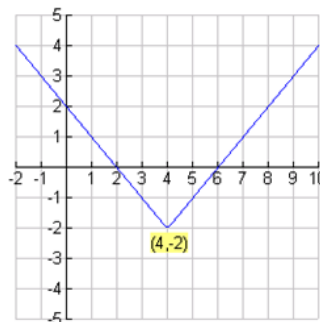
b) $y = 2|x+1| - 5$



4. The parent function $f(x) = 2^x$ is horizontally shrunk by a factor of two, translated right by 10 and translated 5 units down. Write the new function:

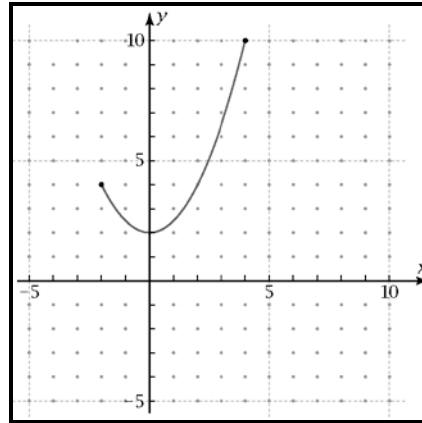
5. Write the equation for the graph shown at the right.

Assume that the parent function is $y = |x|$



6. If $g(x) = -f(x)$, across which axis is $f(x)$ reflected to obtain $g(x)$? _____
7. If $f(3) = 7$ and g is the inverse of f , then $g(7) = ?$ _____

8. Graph the inverse of the function shown at the right.



9. Find the inverse of the following functions:

a) $f(x) = \frac{1}{3}x - 7$

b) $f(x) = 3x + 2$

10. If $f(x) = 3x - 8$ and $g(x) = \frac{1}{2}x + 5$, then $f(g(-4))$?

11. A math test has a bonus question. The directions simply state that if you answer the question correctly, you will receive 5 bonus points and your test grade will be increased by 7% of your score. Let x = test score before answering the bonus question.

a) Write a function, $f(x)$, to represent just the 5 bonus points.

b) Write a function, $g(x)$, to represent just the percent of increase.

c) Explain the meaning of $f(g(x))$.

d) Find $f(g(75))$.

e) Explain the meaning of $g(f(x))$.

f) Find $g(f(75))$.

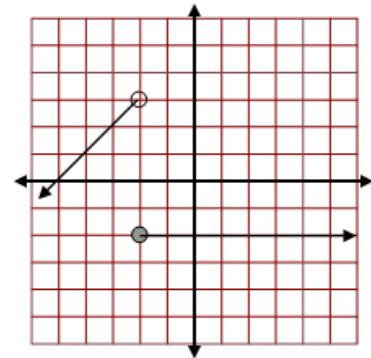
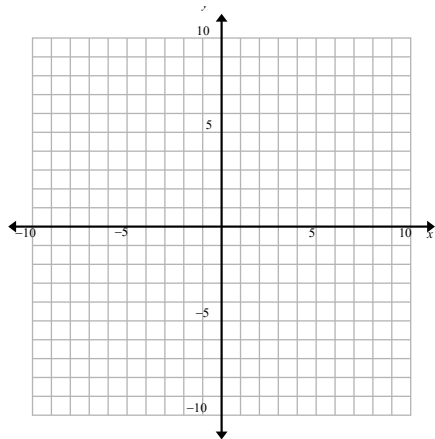
12. Verify that f and g are inverse functions. $f(x) = 2x - 7$, $g(x) = \frac{x+7}{2}$

13. Evaluate the function below for the given value of x . $f(x) = \begin{cases} 9x - 4 & x > 3 \\ \frac{1}{2}x + 1 & x \leq 3 \end{cases}$

- a) $f(-4)$. b) $f(2)$. c) $f(3)$.

14. Graph the piecewise function: $f(x) = \begin{cases} -\frac{1}{2}x - 1 & x < 2 \\ 3x - 7 & x \geq 2 \end{cases}$

15. Write a piecewise function for the graph shown.



Multiple Choice Questions:

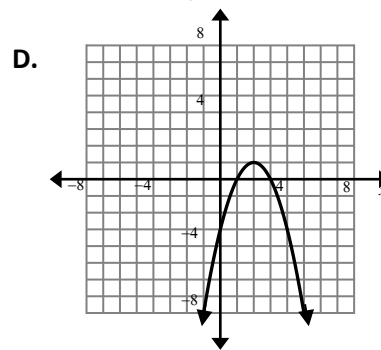
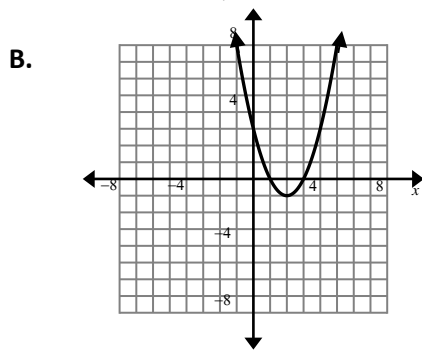
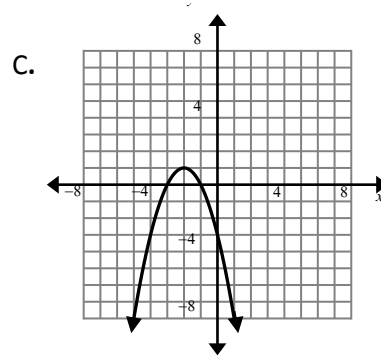
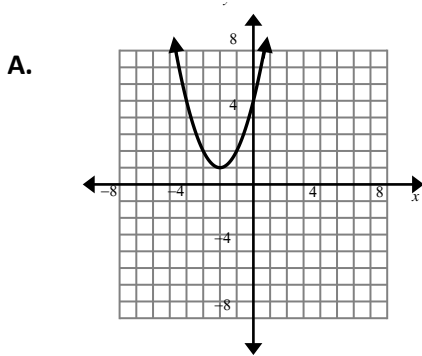
16. A function $f(x)$ takes values of x and applies the following:

- Step 1) divide x by 5**
Step 2) subtract 3 from the result in Step 1

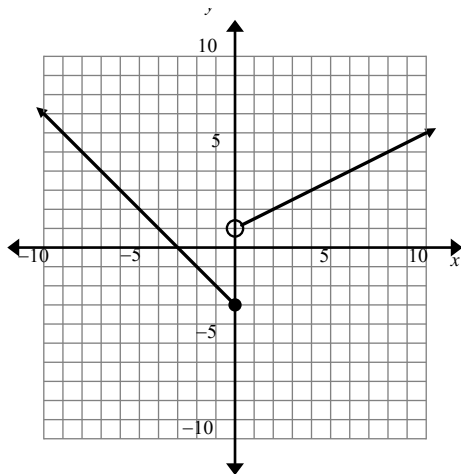
Which of these describes the inverse function of $f(x)$?

- A.** Step 1) multiply x by 5
Step 2) add 3 to the result in Step 1
- B.** Step 1) subtract 3 from x
Step 2) divide the result in Step 1 by 5
- C.** Step 1) add 3 to x
Step 2) multiply the result in Step 1 by 5
- D.** Step 1) divide x by $1/5$
Step 2) subtract -3 from the result in Step 1

17. What graph represents $f(x) = -(x-2)^2 + 1$?



18. Which function is represented by the graph?



A. $f(x) = \begin{cases} -x-3, & \text{if } x \leq 0 \\ \frac{1}{2}x+1, & \text{if } x > 0 \end{cases}$

C. $f(x) = \begin{cases} -x+3, & \text{if } x \leq 0 \\ \frac{1}{2}x+1, & \text{if } x > 0 \end{cases}$

B. $f(x) = \begin{cases} x-3, & \text{if } x \leq 0 \\ -\frac{1}{2}x+1, & \text{if } x > 0 \end{cases}$

D. $f(x) = \begin{cases} x+3, & \text{if } x \leq 0 \\ -\frac{1}{2}x+1, & \text{if } x > 0 \end{cases}$