Ch 4 Practice Test - Functions

Name: _____

1. Circle the graph that best matches the function: $f(x) = 2x^2 - 2$

a. b. c. d.

2. Which equation will shift the graph of $y = x^2$ left 5 units and up 6 units?

a. $y = (x+6)^2-5$

b. $y = (x+5)^2-6$

c. $y = (x+5)^2+6$

d. $y = (x-5)^2+6$

3 What is the vertex for the quadratic equation $y = (x+3)^2 - 2$.

a. (3,2)

b. (-3, -2)

c. (-2, 3)

d. (2, -3)

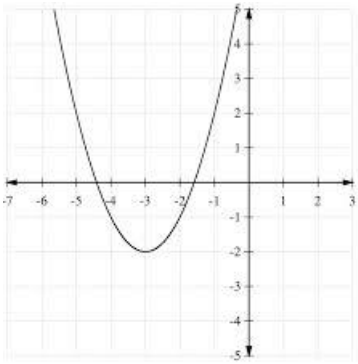
Given the parent function and a description of the transformation, write the equation of the transformed function, f(x).

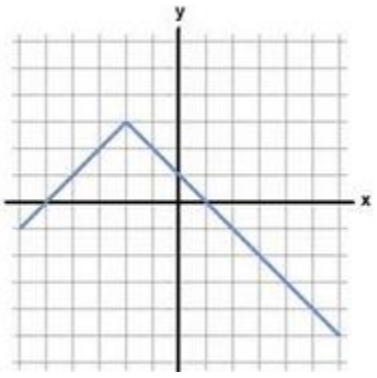
4. An absolute value function with a reflection across the x-axis, vertical shift up 5, and a horizontal shift right 3.

5. A quadratic function with a vertical stretch/compression by $\frac{2}{5}$, and a vertical shift down 2.

6. A square root function that has a stretch of 4, shifted left 3 units, and down 1.

Write a function $f(x)$ to describe the following graphs:



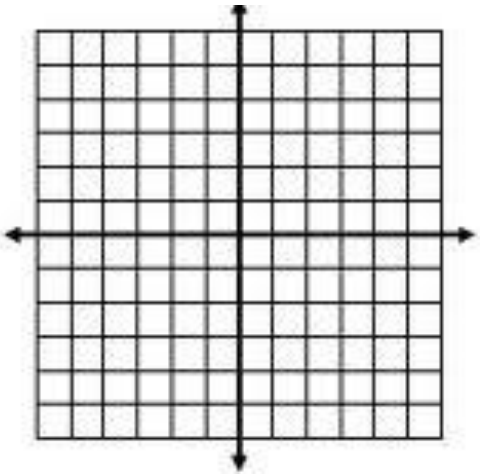


7. _____

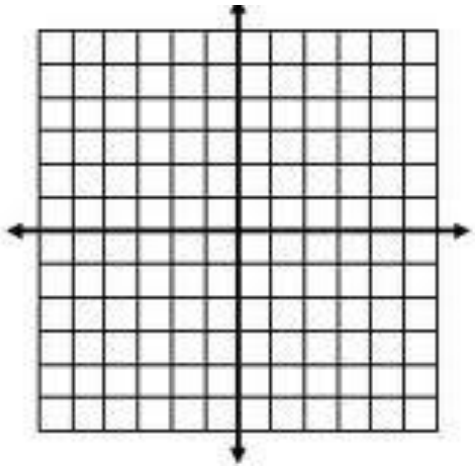
8. _____

Graph the following piecewise functions:

9. $f(x)\begin{cases} x-4, if\ x \le 1 \\ 3x, if\ x > 1 \end{cases} =$



10. $f(x)=\begin{cases} -3x-1, if\ x \le 1 \\ (x-2)^2, \quad if\ x > 1 \end{cases}$



Evaluate the function for the given value of x. $f(x)=\begin{cases} x-2, if\ x < 0 \\ 3, \quad if\ x \ge 0 \end{cases}$ $g(x)=\begin{cases} 2x-1, if\ x \le -3 \\ 4x, \quad if\ x > -3 \end{cases}$

11. $f(0)$ 12. $f(4)$ 13. $g(-2)$

COMBINING FUNCTIONS

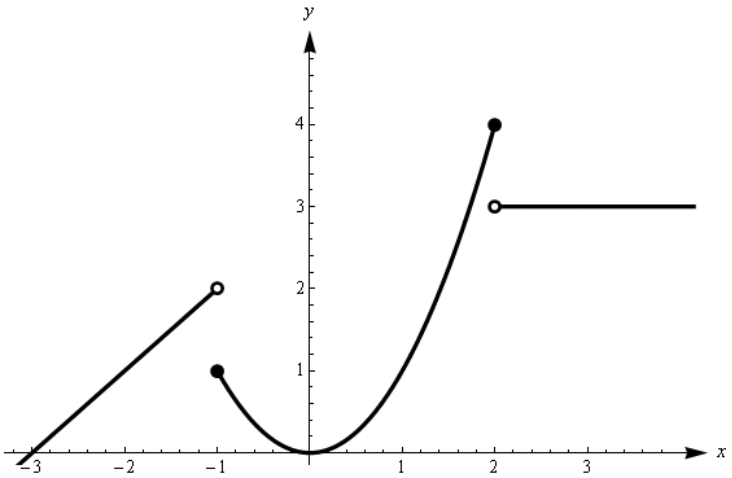
Use the following functions to perform the given operation.

$f(x)=3-2x$ $g(x)=x^2+1$ $h(x)=x^2-3x+4$

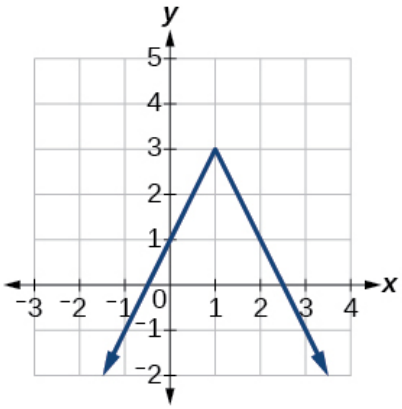
14. $(g+h)(x)$ 15. $\left(\frac{g}{f}\right)(x)$ 16. $f(g(x))$

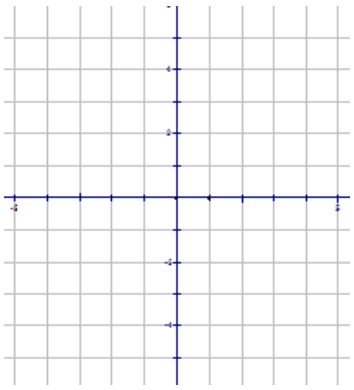
17. $(f\cdot g)(-1)$ 18. $(f-g)(2)$ 19. $(g+h)(0)$ 20. $(f\cdot h)(x)$

21. Write a piecewise function for the graph.



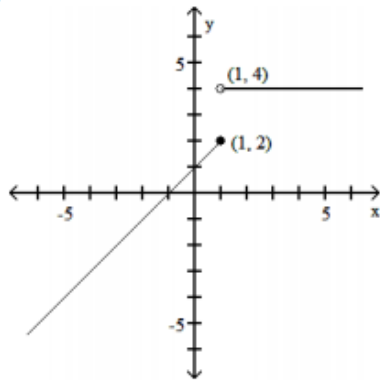
22. Let $f(x)$ be the function represented by the graph below. Perform the indicated transformation and graph the new function on the graph provided. $k(x) = -f(x-2)$



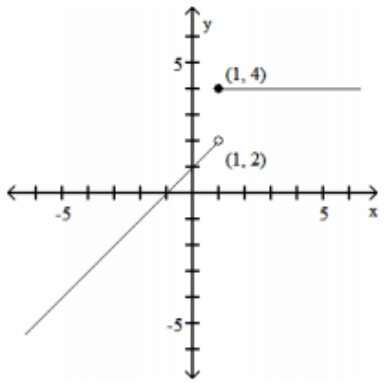


23. Match the piecewise function to its graph. $f(x) = \begin{cases} x+1 & \text{if } x < 1 \\ 4 & \text{if } x \geq 1 \end{cases}$

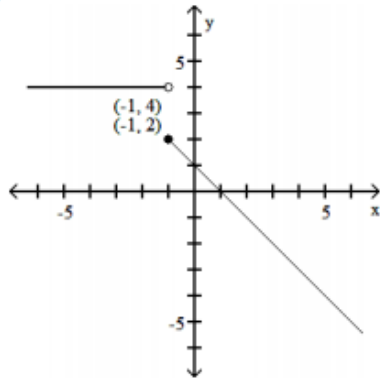
A)



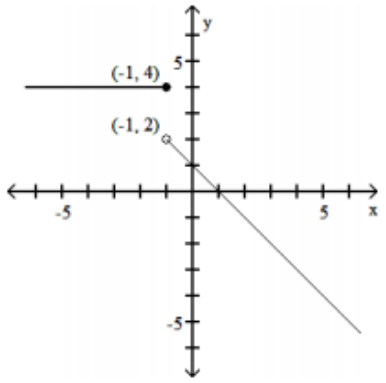
B)



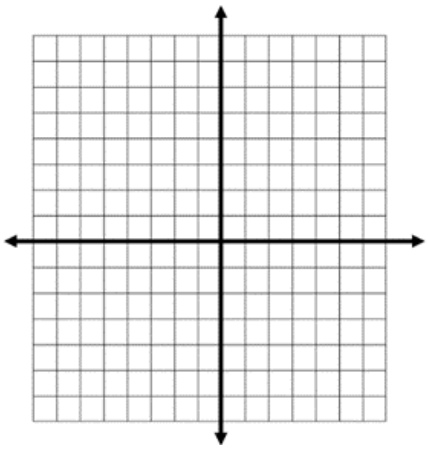
C)



D)



24. Graph the following function with the restricted domain.



$y = 2x - 1, \quad x \leq 3$

25. A supermarket has a discount on bulk candy. Candy costs \$3.50/lb up to 5 lbs. If you buy over 5 lbs. the cost is \$3.00/lb. Express the cost as a function of weight.

a. Write the piecewise function.

b. Graph the function.