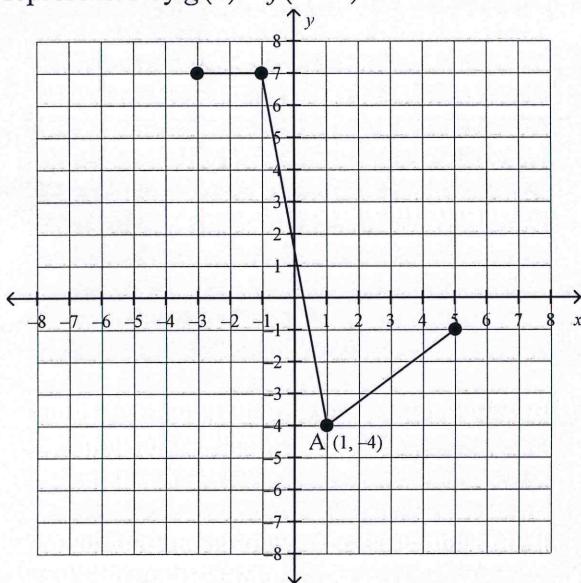


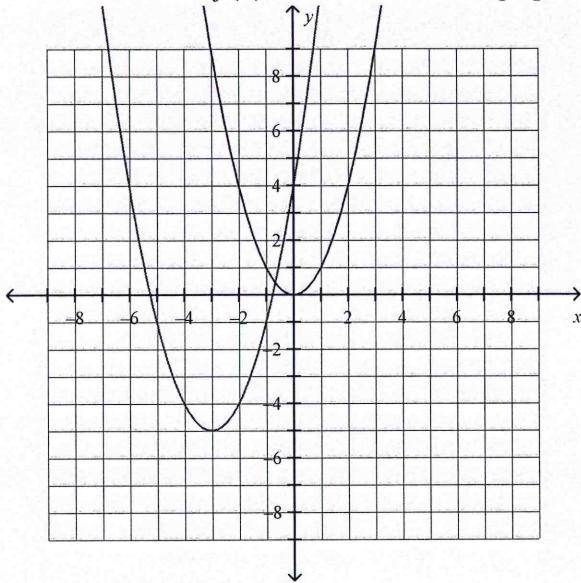
**Pre-Calculus 12 - Chapter 1 Review****Multiple Choice***Identify the choice that best completes the statement or answers the question.*

- \_\_\_\_ 1. Compared to the graph of the base function  $f(x) = |x|$ , the graph of the function  $g(x) + 5 = |x|$  is translated  
A 5 units to the right      C 5 units down  
B 5 units up      D 5 units to the left
- \_\_\_\_ 2. Compared to the graph of the base function  $f(x) = |x|$ , the graph of the function  $g(x) = |x + 9|$  is translated  
A 9 units to the right      C 9 units down  
B 9 units up      D 9 units to the left
- \_\_\_\_ 3. Given the graph of  $f(x)$  shown below, what are the coordinates of point A if the transformed graph is represented by  $g(x) = f(x - 2)$ ?



- A  $(3, -4)$   
B  $(-1, -4)$   
C  $(-1, -2)$   
D  $(3, -6)$

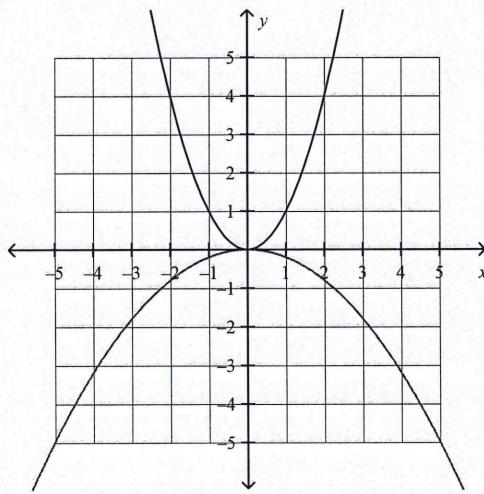
4. What is the equation of the transformed function,  $g(x)$ , after the transformations are applied to the graph of the base function  $f(x) = x^2$ , to obtain the graph of  $g(x)$ ?



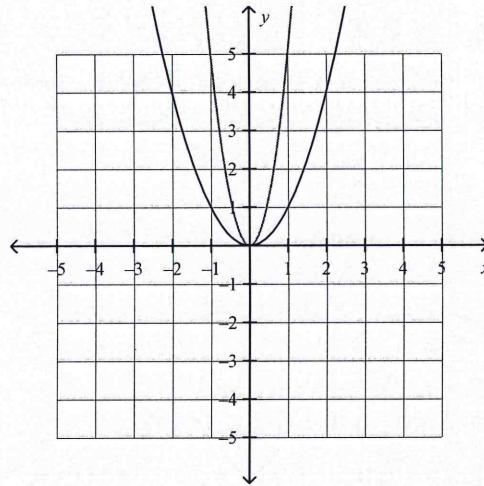
- A  $g(x) + 3 = (x - 5)^2$   
B  $g(x) = (x + 3)^2 - 5$   
C  $g(x) - 5 = (x + 3)^2$   
D  $g(x) = (x - 5)^2 + 3$
5. The function  $f(x) = -g(x)$  represents a transformation that can best be described as  
A a reflection in the  $x$ -axis  
B a reflection in the  $x$ -axis and the  $y$ -axis  
C a reflection in the  $y$ -axis  
D a reflection in the line  $y = x$
6. When a function is reflected in the  $x$ -axis, the coordinates of point  $(x, y)$  become  
A  $(x, -y)$   
B  $(-x, y)$   
C  $(-x, -y)$   
D  $(x, y)$
7. When  $a > 0$ , the function  $g(x) = ax^2$  has what relationship to the base function  $f(x) = x^2$ ?  
A  $f(x)$  is stretched vertically by a factor of  $|a|$  and reflected in the  $x$ -axis  
B  $f(x)$  is stretched horizontally by a factor of  $1/|a|$   
C  $f(x)$  is stretched vertically by a factor of  $|a|$   
D  $f(x)$  is stretched horizontally by a factor of  $1/|a|$  and reflected in the  $y$ -axis
8. When  $b > 0$ , the function  $g(x) = |bx|$  has what relationship to the base function  $f(x) = |x|$ ?  
A  $f(x)$  is stretched vertically by a factor of  $|b|$  and reflected in the  $x$ -axis  
B  $f(x)$  is stretched vertically by a factor of  $|b|$   
C  $f(x)$  is stretched horizontally by a factor of  $1/|b|$  and reflected in the  $y$ -axis  
D  $f(x)$  is stretched horizontally by a factor of  $1/|b|$

9. Which of the graphs shown below represents the base function  $f(x) = x^2$  and the stretched function  $g(x) = -\frac{1}{5}x^2$ ?

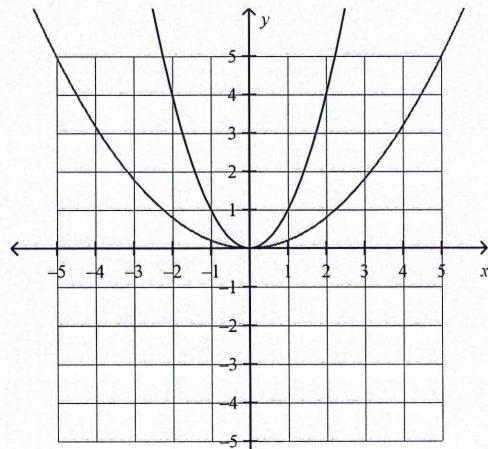
A



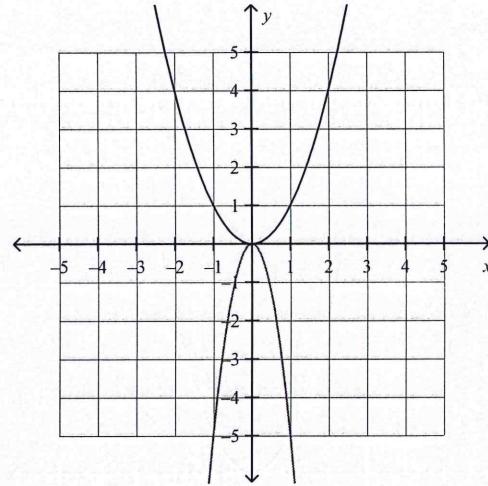
B



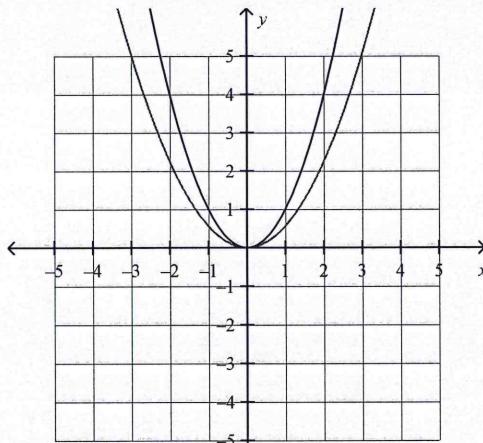
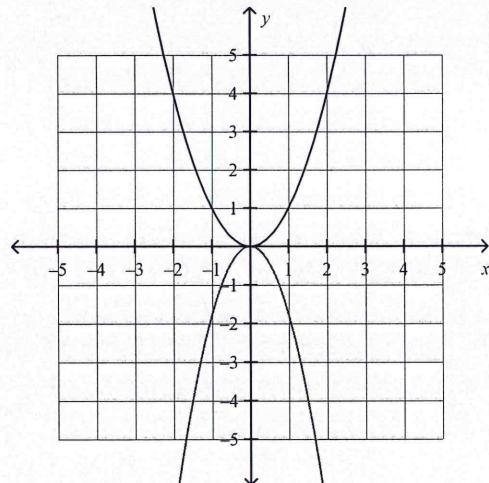
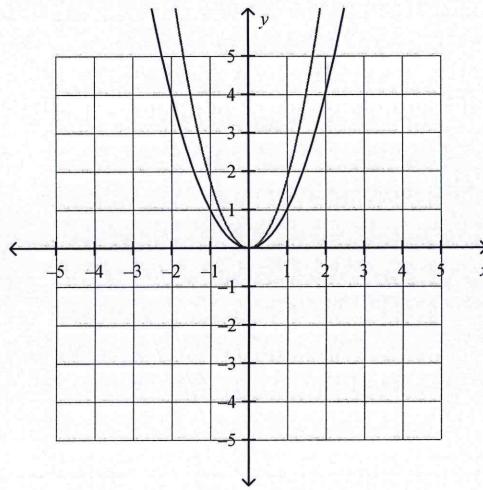
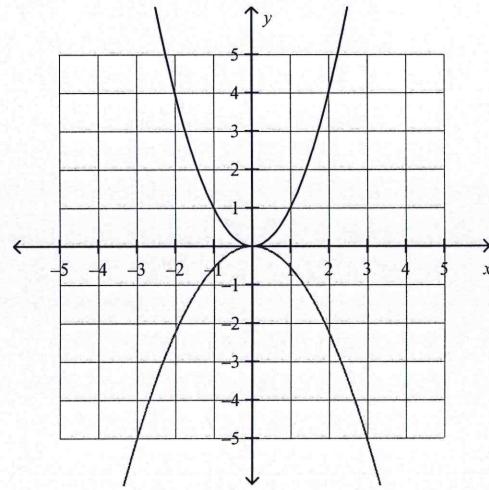
C



D



10. Which of the graphs shown below represents the base function  $f(x) = x^2$  and the stretched function  $g(x) = \left(\frac{3}{4}x\right)^2$ ?

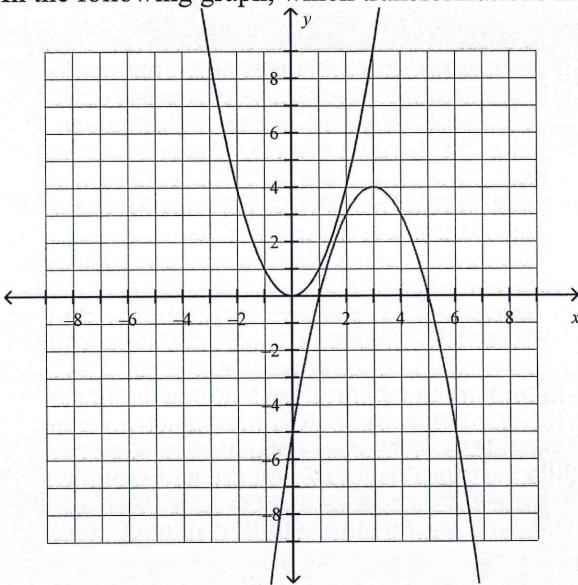
**A****C****B****D**

11. What are the coordinates of the invariant point(s) when the function  $y = |x| - 2$  is reflected in the  $y$ -axis?
- A** (2, -2)      **C** (0, -2)  
**B** (-2, 0) and (2, 0)      **D** (0, 2)
12. When the value of  $a$  is less than -1, the function  $g(x) = ax^2$  has what relationship to the base function  $f(x) = x^2$ ?
- A**  $f(x)$  is compressed vertically  
**B**  $f(x)$  is reflected and compressed vertically  
**C**  $f(x)$  is stretched vertically  
**D**  $f(x)$  is reflected and stretched vertically
13. Compared to the graph of the base function  $f(x) = x^2$ , the graph of the function  $g(x) = (x - 4)^2 + 9$  is translated
- A** 9 units to the left and 4 units down      **C** 9 units to the right and 4 units up  
**B** 4 units to the left and 9 units down      **D** 4 units to the right and 9 units up

14. Which choice best describes the combination of transformations that must be applied to the graph of  $f(x) = |x|$  to obtain the graph of  $g(x) = f(2x - 4)$ ?

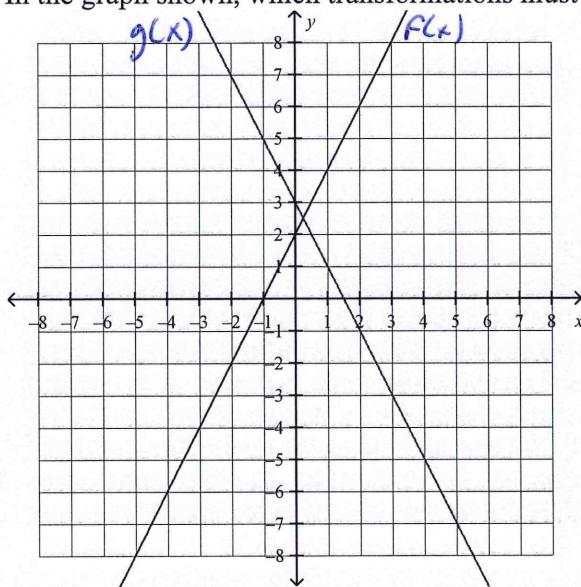
- A a horizontal stretch by a factor of 2 and a horizontal translation of 2 units to the left
- B a horizontal stretch by a factor of  $\frac{1}{2}$  and a horizontal translation of 4 units to the right
- C a horizontal stretch by a factor of  $\frac{1}{2}$  and a horizontal translation of 2 units to the right
- D a horizontal stretch by a factor of -2 and a horizontal translation of 2 units to the right

15. In the following graph, which transformations must be applied to  $f(x) = x^2$  to obtain  $g(x)$ ?



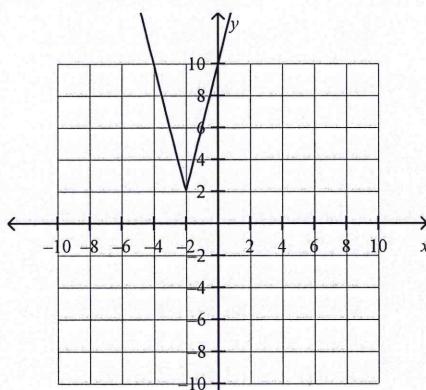
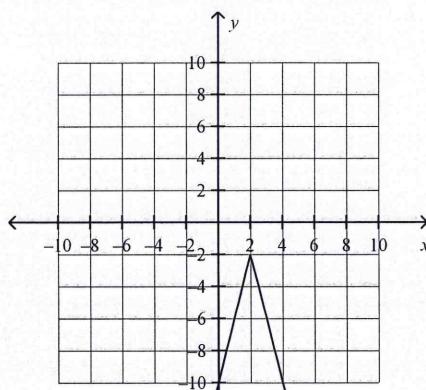
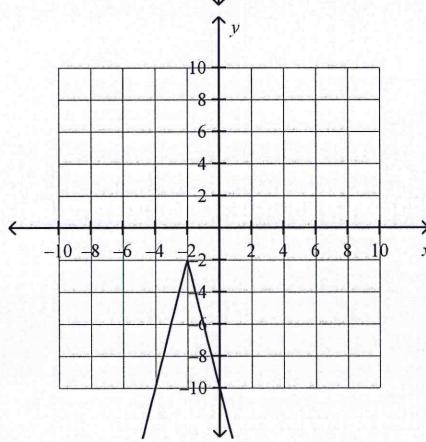
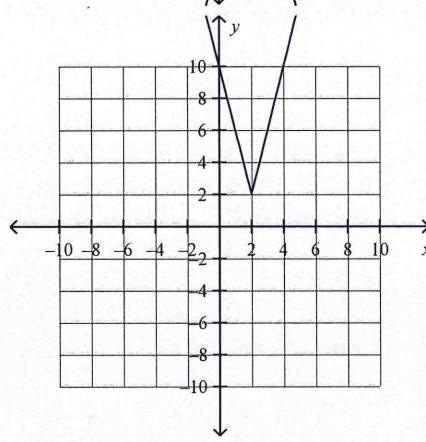
- A a reflection in the  $x$ -axis, a vertical translation of 4 units up, and a horizontal translation of 3 units to the right
- B a reflection in the  $x$ -axis, a vertical translation of 3 units up, and a horizontal translation of 4 units to the right
- C a reflection in the  $x$ -axis, a vertical translation of 3 units down, and a horizontal translation of 4 units to the right
- D a reflection in the  $x$ -axis, a vertical translation of 4 units up, and a horizontal translation of 3 units to the left

16. In the graph shown, which transformations must be applied to  $f(x)$  to obtain  $g(x)$ ?

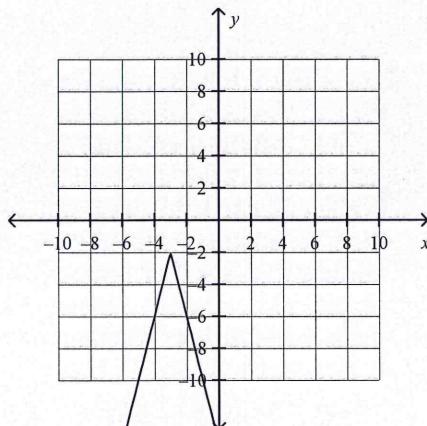
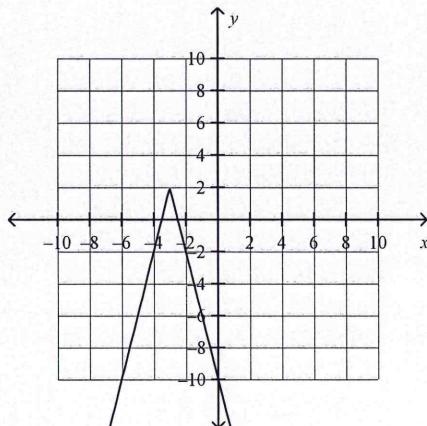
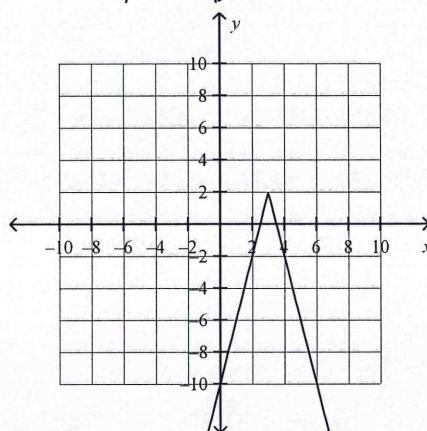
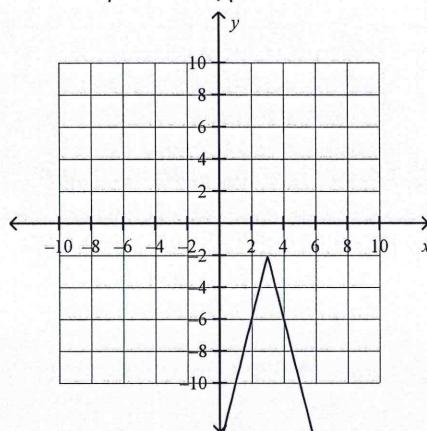


- A a reflection in the  $x$ -axis and a translation of 5 units down
- B a reflection in the  $y$ -axis and a translation of 5 units up
- C a reflection in the  $x$ -axis and a translation of 5 units up
- D a reflection in the  $y$ -axis and a translation of 5 units down

17. Which of the following graphs represents the graph of the function  $f(x) = |x|$  transformed to  $f(x) = 2|-2x + 4| + 2$ ?

**A****C****B****D**

18. When the function  $f(x) = |x|$  is transformed to  $f(x) = -4|x + 3| + 2$ , the graph looks like

**A****C****B****D**

19. Which of the following functions is the correct inverse for the function  $f(x) = 3x + 5$ ?

**A**  $f^{-1}(x) = \frac{1}{3}x - \frac{5}{3}$

**C**  $f^{-1}(x) = -\frac{1}{3}x - \frac{5}{3}$

**B**  $f^{-1}(x) = -\frac{1}{3}x + \frac{5}{3}$

**D**  $f^{-1}(x) = \frac{1}{3}x + \frac{5}{3}$

20. Which of the following functions is the correct inverse for the function  $f(x) = -\frac{9}{2}x + 6$ ?

**A**  $f^{-1}(x) = -\frac{2}{9}x + \frac{4}{3}$

**C**  $f^{-1}(x) = -\frac{2}{9}x - \frac{4}{3}$

**B**  $f^{-1}(x) = \frac{9}{2}x + \frac{4}{3}$

**D**  $f^{-1}(x) = \frac{9}{2}x - \frac{4}{3}$

21. Which of the following functions is the correct inverse for the function  $f(x) = x^2 + 7$ ,

$\{x \mid x \geq 0, x \in \mathbb{R}\}$ ?

**A**  $f^{-1}(x) = (x - 7)^2$

**C**  $f^{-1}(x) = \sqrt{x - 7}$

**B**  $f^{-1}(x) = \sqrt{x} + 7$

**D**  $f^{-1}(x) = \sqrt{x + 7}$

22. Which of the following relations is the correct inverse for the function  $f(x) = x^2 + 6x + 2$ ?

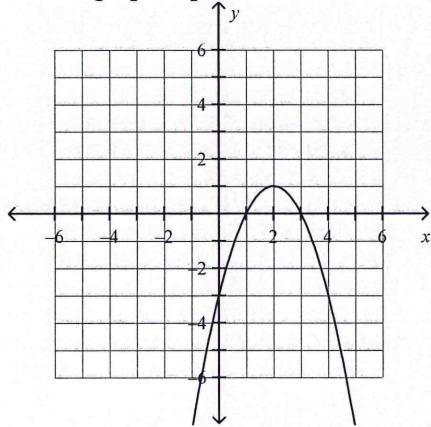
A  $f^{-1}(x) = 3 \pm \sqrt{x - 7}$

C  $f^{-1}(x) = -3 \pm \sqrt{x + 7}$

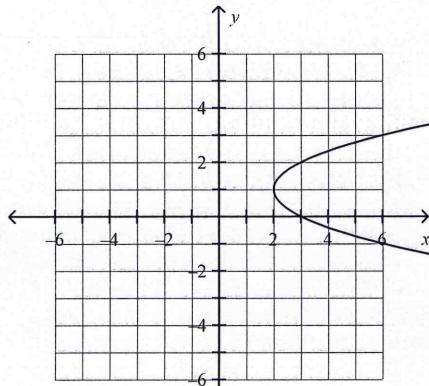
B  $f^{-1}(x) = 7 \pm \sqrt{x + 3}$

D  $f^{-1}(x) = -7 \pm \sqrt{x - 3}$

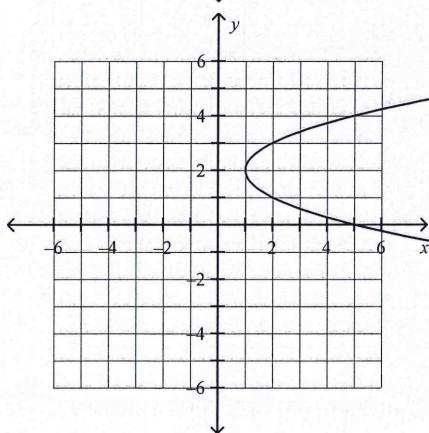
23. Which graph represents the inverse of the graph shown?



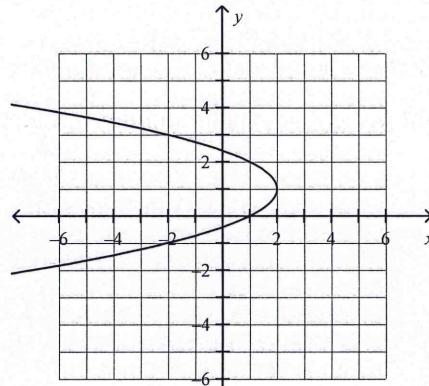
A



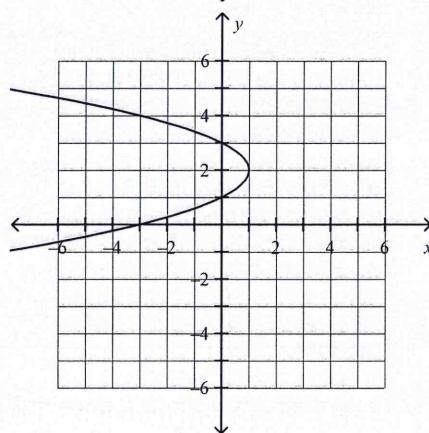
B



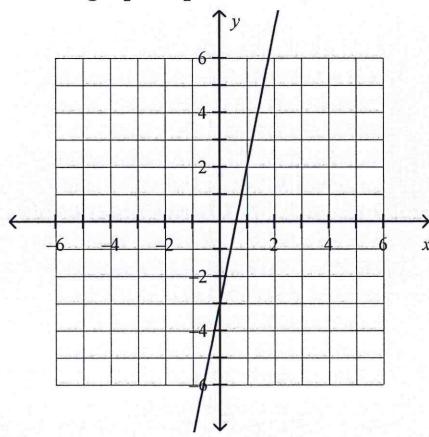
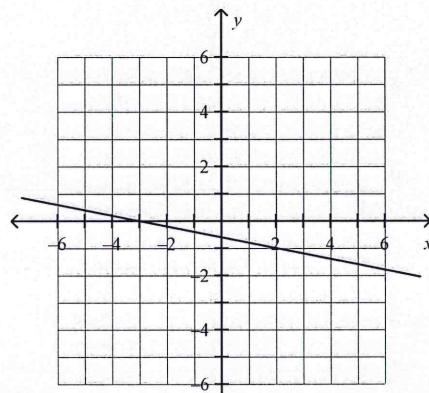
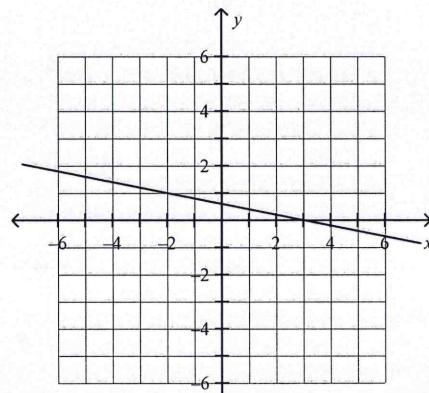
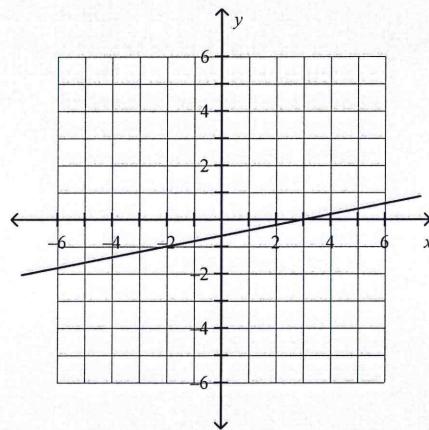
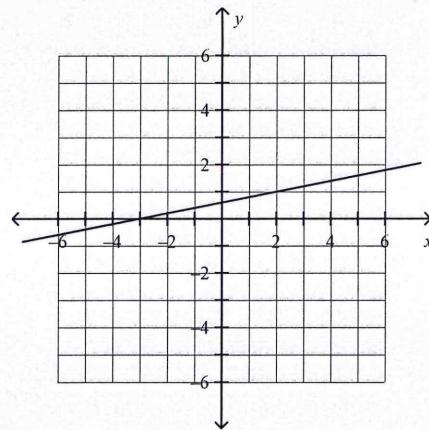
C



D



24. Which graph represents the inverse of the function shown?

**A****C****B****D**

25. The equation of the inverse of  $f(x) = -9x$  is

**A**  $f^{-1}(x) = \frac{x}{-9}$

**C**  $f^{-1}(x) = 9x$

**B**  $f^{-1}(x) = \frac{x}{9}$

**D**  $f^{-1}(x) = -9x$