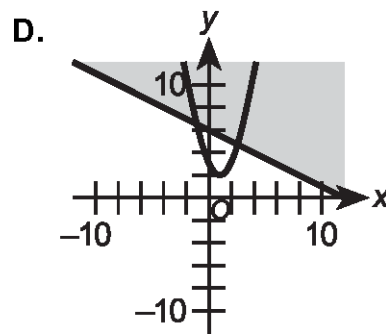
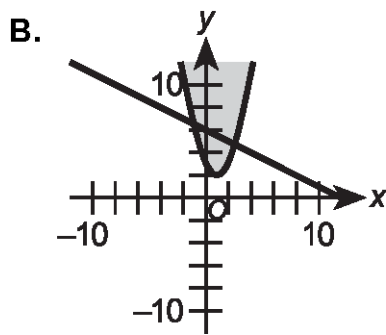
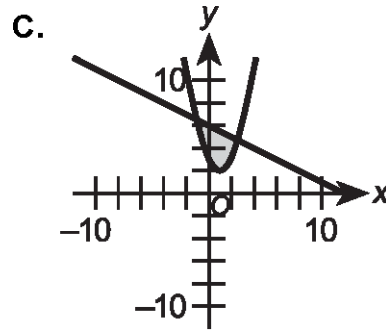
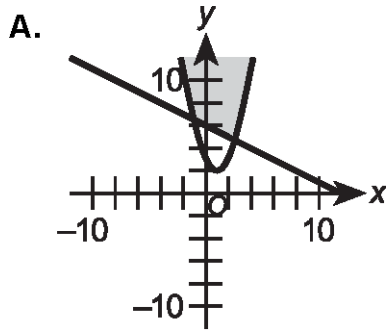


- 1) Which transformations can be performed on the graph of $f(x) = x^2$ that result in the graph of $f'(x) = -2x^2 - 12x - 13$?
- A. Shift left 3 units, stretch horizontally by a factor of 2, reflect through the y -axis, and shift down 5 units
 - B. Shift right 3 units, stretch horizontally by a factor of 2, reflect through the y -axis, and shift down 5 units
 - C. Shift left 3 units, stretch vertically by a factor of 2, reflect through the x -axis, and shift up 5 units
 - D. Shift right 3 units, stretch vertically by a factor of 2, reflect through the x -axis, and shift down 5 units
- 2) The function $y = (x + 2)^2 + 3$ is reflected across the y -axis. What are the coordinates of the vertex after this reflection?
- A. $(-2, -3)$
 - B. $(-2, 3)$
 - C. $(2, -3)$
 - D. $(2, 3)$

3) Which graph represents the solution set of this system of inequalities?

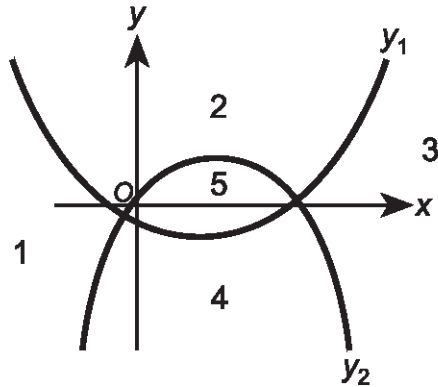
$$\begin{cases} y \geq x^2 - 2x + 3 \\ x + 2y \leq 12 \end{cases}$$



4) Which function has the same range as $y = (x + 3)^2$?

- A. $y = (x + 3)^2 - 2$
- B. $y = x^2 + 9$
- C. $y = 2(x - 3)^2 + 1$
- D. $y = (x - 5)^2$

- 7) This graph shows $y_1 = x^2 - 3x - 5$ and $y_2 = -x^2 + 4x + 1$.



What region(s) should be shaded to represent this system of inequalities?

$$\begin{cases} y_1 \geq x^2 - 3x - 5 \\ y_2 \geq -x^2 + 4x + 1 \end{cases}$$

- A. 2
 B. 5
 C. 2 and 3
 D. 2 and 5
- 8) A parabola has vertex $(2,3)$, focus $(2,7)$, and directrix $y = -1$. What is the equation of the parabola?

- A. $(y - 2)^2 = 16(x - 3)$
 B. $(y + 2)^2 = 16(x + 3)$
 C. $(x - 2)^2 = 16(y - 3)$
 D. $(x + 2)^2 = 16(y + 3)$

- 10) A certain relation is defined by these ordered pairs:

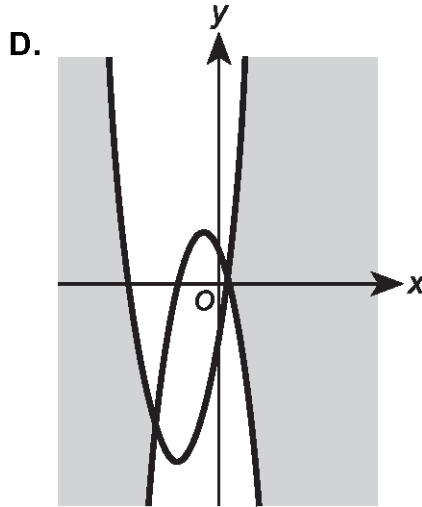
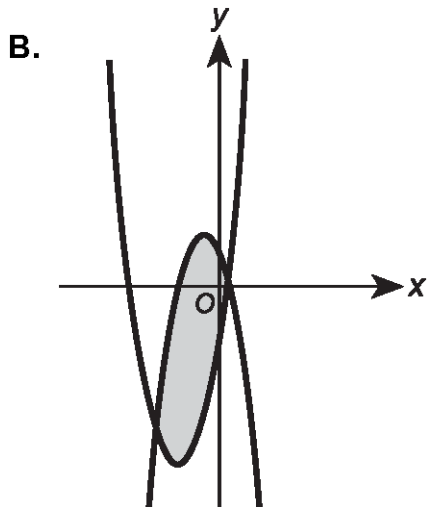
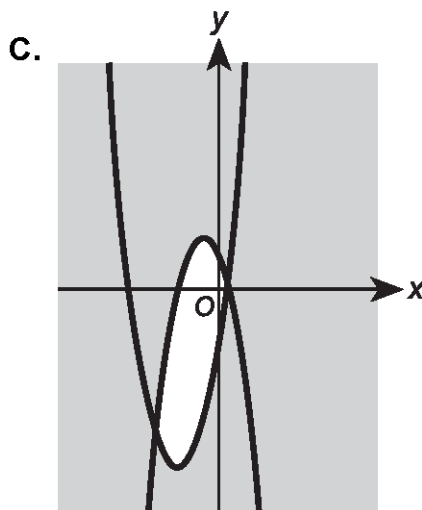
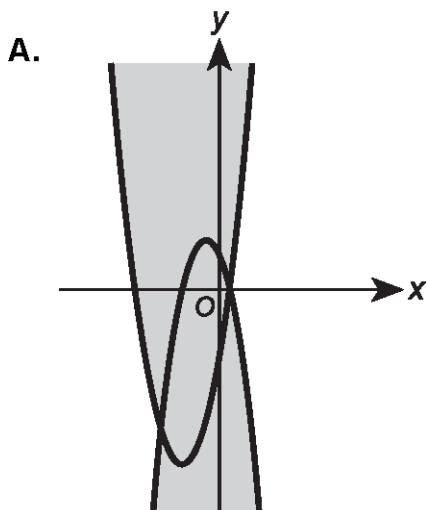
$$\{(2,2), (-2,2), (2,-2), (-2,-2)\}$$

If this relation is translated 5 units to the right, what is the resulting relation?

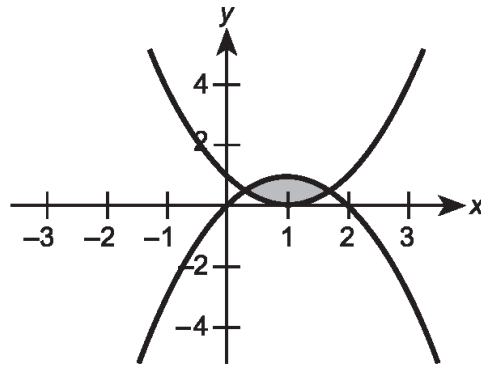
- A. $\{(2,7), (-2,7), (2,3), (-2,3)\}$
 B. $\{(7,7), (5,7), (7,3), (3,3)\}$
 C. $\{(10,2), (-10,2), (10,-2), (-10,-2)\}$
 D. $\{(7,2), (3,2), (7,-2), (3,-2)\}$

11) Which graph represents the solution set to this system of inequalities?

$$\begin{cases} y \geq x^2 + 6x - 5 \\ y \leq -x^2 - 2x + 3 \end{cases}$$



18) Which system of inequalities describes the shaded region in this graph?



- A. $0.5 \leq x \leq 1.5$ and $0 \leq y \leq 1$
- B. $y \geq x^2$ and $y \leq -x^2$
- C. $x^2 \leq y \leq -x^2 + 1$
- D. $y \geq (x - 1)^2$ and $y \leq -(x - 1)^2 + 1$

19) Consider the function $g(x) = -(x + 3)^2 + 1$.

- A. Describe the transformations that occur to the graph of $f(x) = x^2$ to get $g(x)$.
- B. Graph $g(x)$ using the vertex and at least 3 points on one side of the vertex. Show your work algebraically.
- C. What are the domain and range of $g(x)$? Explain how you found your answers.

