

Sample Problems

1. What is the parent graph of the following function and what transformations have taken place on it:
 $y = (x - 3)^2$?

(A) The parent graph is $y = x^2$, which is shifted 3 units up.
(B) The parent graph is $y = x^2$, which is shifted 3 units down
(C) The parent graph is $y = x^2$, which is shifted 3 units to the left
(D) The parent graph is $y = x^2$, which is shifted 3 units to the right.

2. If $f(x) = 3x^2 - 2$ and $g(x) = 4x + 2$, what is the value of $(f + g)(-1)$?

(A) -7
(B) -1
(C) 1
(D) 7

3. What is the inverse of the function $f(x) = (x + 4)^2$?

(A) $f^{-1}(x) = \sqrt{x} - 4$
(B) $f^{-1}(x) = \frac{1}{(x+4)^2}$
(C) $f^{-1}(x) = \pm\sqrt{x} - 4$
(D) $f^{-1}(x) = (x - 4)^2$

4. Which quadrants contain the solutions to this system of inequalities?

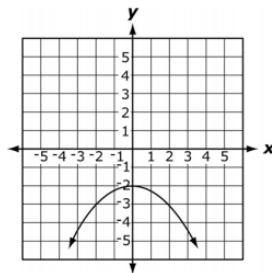
$$\begin{cases} y - 2x \leq -3 \\ 3y + x \geq -4 \end{cases}$$

(A) A quadrants I and IV
(B) quadrants II and III
(C) quadrants III and IV
(D) quadrants II, III, and IV

5. What are the coordinates at the minimum point of $f(x) = x^2 - 4x + 3$?

(A) $(-1, -2)$
(B) $(-1, 2)$
(C) $(2, -1)$
(D) $(2, 1)$

6. Which function represents this graph?



(A) $f(x) = \frac{-1}{4}x^2 - 2$
(B) $f(x) = \frac{1}{4}x^2 - 2$
(C) $f(x) = -4x^2 - 2$
(D) $f(x) = 4x^2 - 2$