

NAME: _____ Algebra I

Standard form characteristics

equation of a parabola that has $x = -2$ as its axis of symmetry is

- (1) $y = x^2 - 4x + 1$ (3) $y = 2x^2 + 8x - 3$
 (2) $y = x^2 - 2x + 3$ (4) $y = 2x^2 + 4x - 7$

Which equation and ordered pair represent the correct vertex form and vertex for $j(x) = x^2 - 12x + 7$?

- (1) $j(x) = (x - 6)^2 + 43$, (6,43)
 (2) $j(x) = (x - 6)^2 + 43$, (-6,43)
 (3) $j(x) = (x - 6)^2 - 29$, (6,-29)
 (4) $j(x) = (x - 6)^2 - 29$, (-6,-29)

What is the equation of the axis of symmetry of the parabola represented by the equation $y = 2x^2 + 16x - 11$?

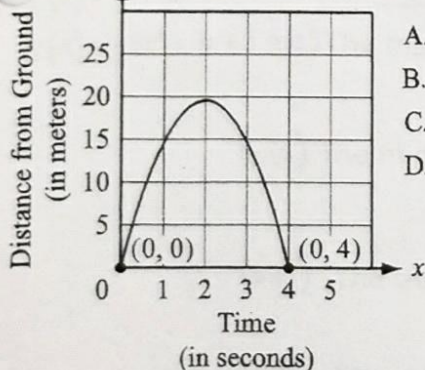
- (1) $x = -8$ (3) $x = -4$
 (2) $x = 8$ (4) $x = 4$

What are the coordinates of the turning point for the graph of the parabola whose equation is $y = x^2 - 4$?

- (1) (0,-2) (3) (0,-4)
 (2) (0,2) (4) (0,4)

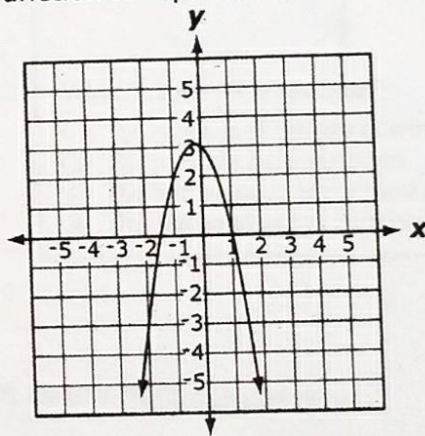
A toy rocket is launched from the ground. The graph below shows the height of the rocket over time, x .

At what time, x , does the rocket reach its maximum height?



- A. $x = 0$ seconds
 B. $x = 2$ seconds
 C. $x = 4$ seconds
 D. $x = 20$ seconds

Which function is represented by this graph?

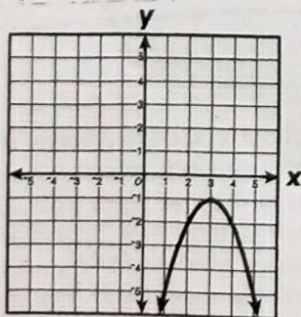


- A. $f(x) = 2x^2 - x + 3$
 B. $f(x) = -2x^2 - x + 3$
 C. $f(x) = 2x^2 - 3x + 1$
 D. $f(x) = -2x^2 - 3x + 1$

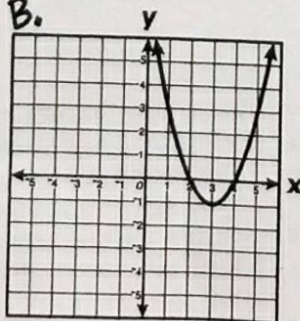
Which graph best represents the following equation?

$$y = -(x - 3)^2 - 1$$

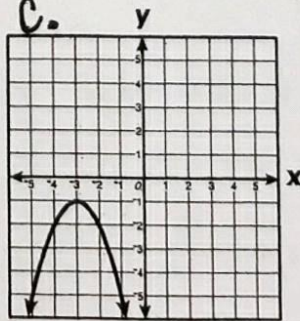
A.



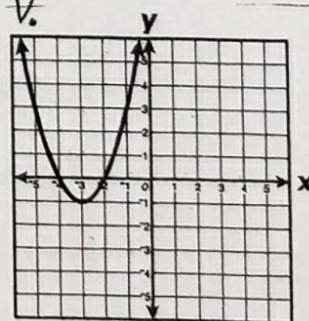
B.



C.



D.



Standard form WORD Problems

① The function $f(x) = 3x^2 + 12x + 11$ can be written

- (1) $f(x) = (3x + 6)^2 - 25$ (3) $f(x) = 3(x + 2)^2 - 1$
 (2) $f(x) = 3(x + 6)^2 - 25$ (4) $f(x) = 3(x + 2)^2 + 7$

② What is the vertex of the graph for this function?

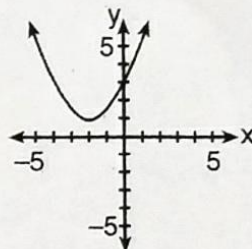
- $-2(x - 1)^2 = y + 5$ **F** $(-1, 5)$ **H** $(1, -5)$
G $(2, 5)$ **J** $(-2, -5)$

③ Which function's graph has a vertex at $(3, 5)$ and contains the point $(5, 13)$?

- F** $y = \frac{1}{10}(x + 3)^2 - 5$ **H** $y = 2(x - 3)^2 + 5$
G $y = \frac{1}{10}(x - 3)^2 - 5$ **J** $y = 2(x + 3)^2 + 5$

④

The accompanying diagram shows a parabola.



Which statement is *not* true?

- (1) The equation of the axis of symmetry is $x = -2$.
 (2) The parabola has a minimum point.
 (3) The turning point of the parabola is $(-2, 1)$.
 (4) The parabola has two x -intercepts.

⑤ The height, h , in feet, a ball will reach when thrown in the air is a function of time, t , in seconds, given by the equation $h(t) = -16t^2 + 30t + 6$. Find, to the *nearest tenth*, the maximum height, in feet, the ball will reach.

⑥ $f(x) = x^2 - x + 6$ True or False:

$g(x) = -3x^2 + 3x + 5$ (6a) The maximum of $g(x)$ is the same as the minimum of $f(x)$.

(6b) The minimum of $f(x)$ is greater than the maximum of $g(x)$.

(6c) The maximum of $f(x)$ is greater than the minimum of $g(x)$.

(6d) The maximum of $f(x)$ is the same as the minimum of $g(x)$.

(6e) They have the same x -intercepts.

⑦

A rock is thrown vertically from the ground with a velocity of 24 meters per second, and it reaches a height of $2 + 24t - 4.9t^2$ after t seconds. How many seconds after the rock is thrown will it reach maximum height, and what is the maximum height the rock will reach, in meters? How many seconds after the rock is thrown will it hit the ground? Round your answers to the *nearest hundredth*.

- a) How many seconds ...
 b) Maximum height ...
 c) hit the ground ...