

Name: _____

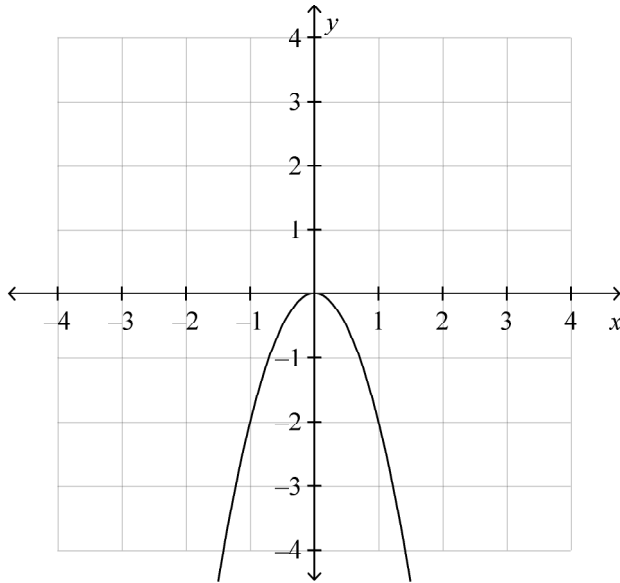
Class: _____ Date: _____

PostAssessment Quadratic Unit

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1 Identify the vertex of the graph. Tell whether it is a minimum or maximum.



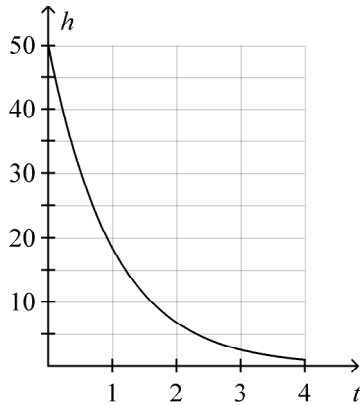
- A (0, 1); maximum C (0, 1); minimum
B (0, 0); minimum D (0, 0); maximum

- _____ 2 Which of the quadratic functions has the narrowest graph?

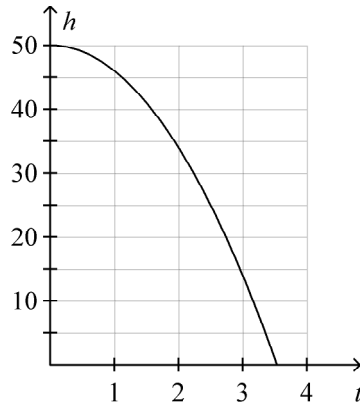
- A $y = -3x^2$ B $y = -2x^2$ C $y = \frac{1}{11}x^2$ D $y = \frac{1}{5}x^2$

- 3 If an object is dropped from a height of 50 feet, the function $h(t) = -16t^2 + 50$ gives the height of the object after t seconds. Graph the function.

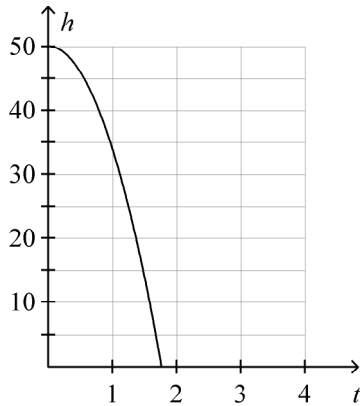
A



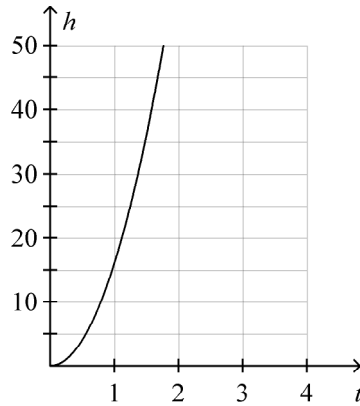
C



B



D



- 4 Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of

$$y = 4x^2 + 5x - 1$$

A $x = \frac{5}{8}$; vertex: $\left(\frac{5}{8}, 4\frac{5}{8}\right)$

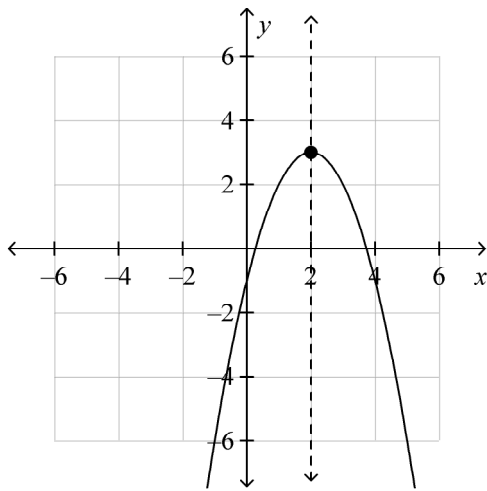
C $x = -\frac{5}{8}$; vertex: $\left(-\frac{5}{8}, -5\frac{11}{16}\right)$

B $x = \frac{5}{8}$; vertex: $\left(\frac{5}{8}, 3\frac{11}{16}\right)$

D $x = -\frac{5}{8}$; vertex: $\left(-\frac{5}{8}, -2\frac{9}{16}\right)$

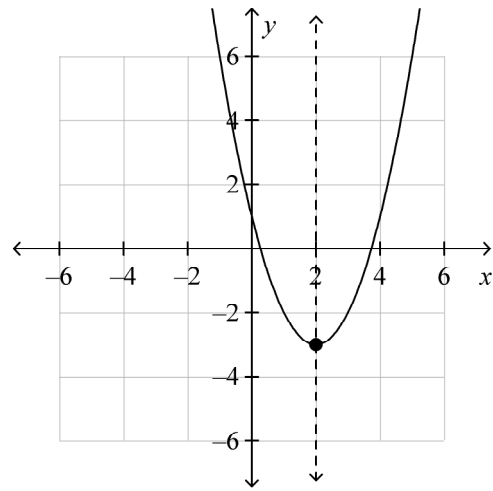
5 Graph $f(x) = x^2 - 4x + 1$. Label the axis of symmetry and vertex.

A



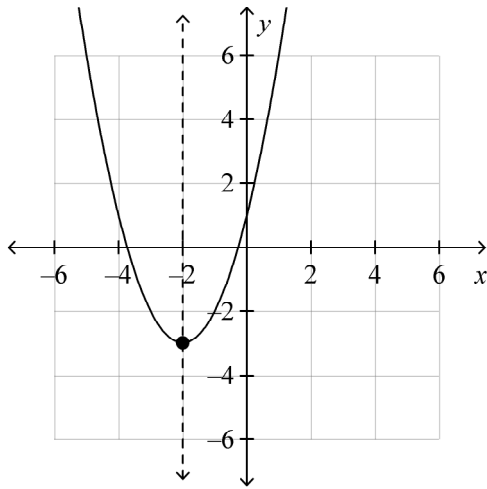
Axis of symmetry: $x = 2$
Vertex: $(2, 3)$

C



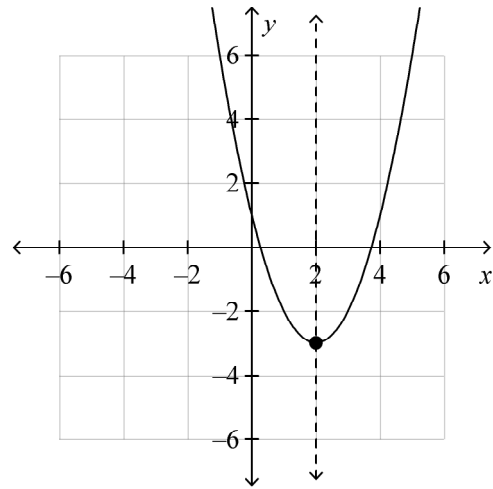
Axis of symmetry: $x = 2$
Vertex: $(2, -3)$

B



Axis of symmetry: $x = -2$
Vertex: $(-2, -3)$

D



Axis of symmetry: $x = 2$
Vertex: $(2, 3)$

_____ 6 Suppose you have 56 feet of fencing to enclose a rectangular dog pen. The function $A = 28x - x^2$, where x = width, gives you the area of the dog pen in square feet. What width gives you the maximum area? What is the maximum area? Round to the nearest tenth as necessary.

A width = 14 ft; area = 196 ft²

C width = 28 ft; area = 420 ft²

B width = 14 ft; area = 588 ft²

D width = 28 ft; area = 196 ft²

_____ 7 A ball is thrown into the air with an upward velocity of 40 ft/s. Its height h in feet after t seconds is given by the function $h = -16t^2 + 40t + 10$. In how many seconds does the ball reach its maximum height? Round to the nearest hundredth if necessary. What is the ball's maximum height?

A 1.25 s; 85 ft

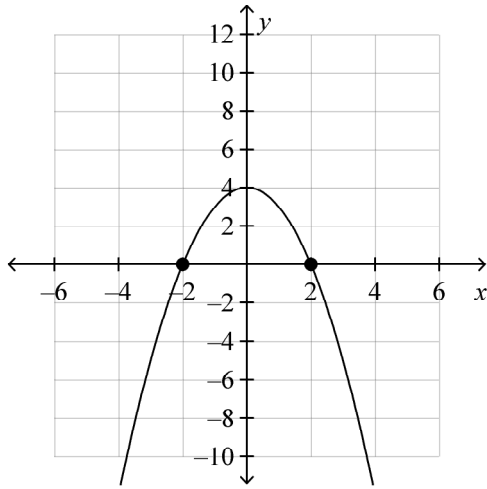
B 1.25 s; 40 ft

C 1.25 s; 35 ft

D 2.5 s; 10 ft

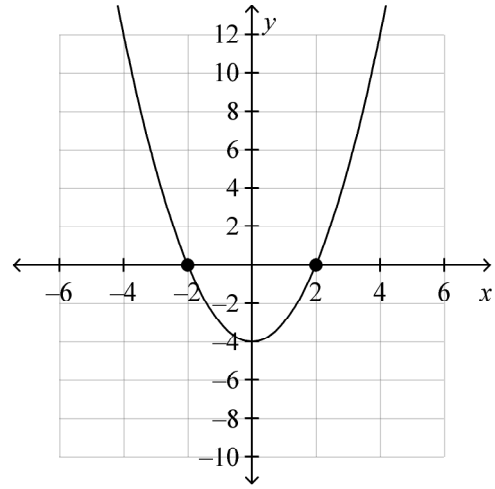
8 Solve $x^2 + 2 = 6$ by graphing the related function.

A



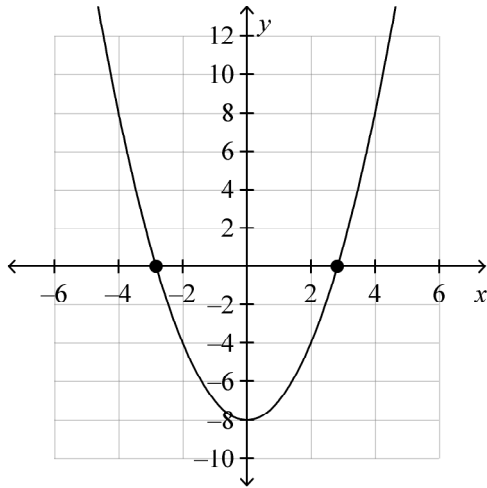
There are two solutions: 2 and -2.

C



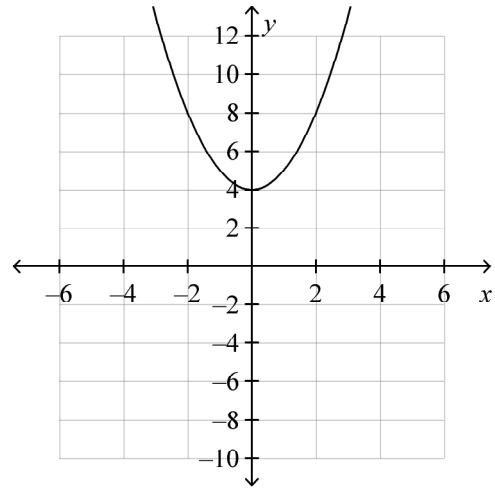
There are two solutions: 2 and -2.

B



There are two solutions: $\pm\sqrt{8}$.

D



There are no real number solutions.

Solve the following equations using square roots.

_____ 9 $x^2 - 15 = 34$

- A ± 49
- B ± 7

- C 7
- D no real number solutions

_____ 10 $x^2 + 20 = 4$

- A $\sqrt{24}$
- B -4

- C $\pm\sqrt{24}$
- D no real number solutions

_____ 11 Solve $(x-11)(x-5) = 0$ using the Zero Product Property.

- A $x = 11$ or $x = 5$
- B $x = -11$ or $x = 5$

- C $x = -11$ or $x = -5$
- D $x = 11$ or $x = -5$

Solve the following equations by factoring.

_____ 12 $z^2 - 11z + 30 = 0$

- A $z = -5$ or $z = 6$
- B $z = -5$ or $z = -6$

- C $z = 5$ or $z = 6$
- D $z = 5$ or $z = -6$

_____ 13 $3z^2 - 6z + 3 = 0$

- A $z = 3$ or $z = 1$
- B $z = 1$ or $z = 1$

- C $z = 1$ or $z = -1$
- D $z = 3$ or $z = -1$

___ 14 $c^2 - 6c = 0$

- A $c = 1$ or $c = -\sqrt{6}$
B $c = 0$ or $c = 6$

- C $c = 0$ or $c = \sqrt{6}$
D $c = 0$ or $c = -6$

___ 15 The expression $ax^2 - bx = 0$ _____ has the solution $x = 0$.

- A always B sometimes C never

Solve the following equations by completing the square.

___ 16 $x^2 - 6x = -15$

- A $-3 \pm 2i\sqrt{6}$ B $3 \pm i\sqrt{6}$ C $3 \pm \sqrt{6}$ D $-3 \pm 2\sqrt{6}$

___ 17 $x^2 - 4x - 6 = 0$

- A -8, 12 B 4, 0 C 1.41, 3.16 D 5.16, -1.16

Use the Quadratic Formula to solve the following equations.

___ 18 $2a^2 - 46a + 252 = 0$

- A 18, 28 B -9, -14 C 9, 14 D -18, 28

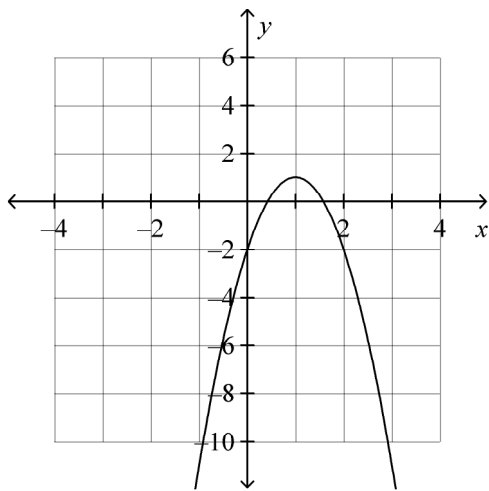
___ 19 $x^2 + 6x + 18 = 0$

- A no solution B 0, -6 C $-3 \pm 3i$ D $-3 \pm 3\sqrt{3}$

___ 20 A rocket is launched from atop a 58-foot cliff with an initial velocity of 141 ft/s. Substitute the values into the vertical motion formula $h = -16t^2 + vt + c$. Let $h = 0$. Use the quadratic formula find out how long the rocket will take to hit the ground after it is launched. Round to the nearest tenth of a second.

- A $0 = -16t^2 + 141t + 58$; 9.2 s C $0 = -16t^2 + 141t + 58$; 0.4 s
 B $0 = -16t^2 + 58t + 141$; 0.4 s D $0 = -16t^2 + 58t + 141$; 9.2 s

___ 21 For which discriminant is the graph possible?



- A $b^2 - 4ac = -9$ B $b^2 - 4ac = 4$ C $b^2 - 4ac = 0$

Find the number of real solutions for the following equations.

___ 22 $x^2 - 18x + 81 = 0$

- A 2 B 1 C 0

___ 23 $x^2 - 2 = 0$

- A 1 B 2 C 0

Use the following functions to answer the next set of questions: $f(x) = 3x - 2$, $g(x) = 3x^2 + 2x - 1$, $h(x) = 4x + 8$ and $k(x) = 2x^2 - x - 9$.

_____ 24 Find $g(x) + k(x)$.

A $-5x^2 - x + 10$

B $-x^2 - 3x - 8$

C $5x^2 + x - 10$

D $x^2 + 3x + 8$

_____ 25 Find $f(x) \cdot h(x)$.

A $12x^2 + 16x - 16$

B $12x^2 - 16$

C $12x^2 + 32x - 16$

D $12x^2 + 32x + 16$

_____ 26 Find $\left(\frac{f}{h}\right)(2)$.

A 4

B $\frac{1}{4}$

C 2

D $\frac{1}{2}$

_____ 27 Find $(g - k)(3)$.

A 24

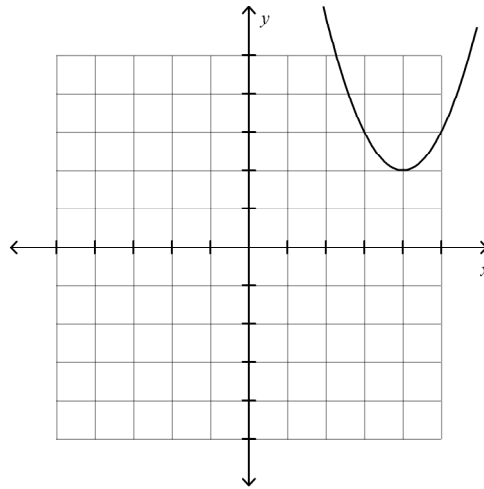
B 86

C 38

D 26

- ___ 28 Find the inverse of the function: $f(x) = x^2 - 4$. Is the inverse a function?
- A $f^{-1}(x) = x^2 + 4$; yes it is a function.
- B $f^{-1}(x) = \pm\sqrt{x+4}$; yes it is a function.
- C $f^{-1}(x) = \pm\sqrt{x+4}$; no it is not a function.
- D $f^{-1}(x) = x^2 + 4$; no it is not a function.
- ___ 29 Find the inverse of the function: $f(x) = (x-2)^2 + 3$. State the domain and range of the inverse.
- A $f^{-1}(x) = \pm\sqrt{x-3} + 2$
Domain: $\{x | x \in \mathfrak{R}\}$ Range: $\{y | y \geq 3\}$
- B $f^{-1}(x) = \pm\sqrt{x-3} + 2$
Domain: $\{x | x \geq 3\}$ Range: $\{y | y \in \mathfrak{R}\}$
- C $f^{-1}(x) = \pm\sqrt{x+3} - 2$
Domain: $\{x | x \in \mathfrak{R}\}$ Range: $\{y | y \geq 3\}$
- D $f^{-1}(x) = \pm\sqrt{x+3} - 2$
Domain: $\{x | x \geq 3\}$ Range: $\{y | y \in \mathfrak{R}\}$
- ___ 30 What transformation of the parent function, $f(x) = x^2$, is the function $f(x) = -(x+2)^2$?
- A Reflect across the x-axis and translate right 2.
- B Reflect across the y-axis and translate up 2.
- C Reflect across the x-axis and translate left 2.
- D Reflect across the y-axis and translate down 2.
- ___ 31 Write a function that represents the parent function, $y = x^2$, after it has been translated 3 up and 2 right.
- A $y = (x-3)^2 + 2$
- B $y = (x-2)^2 + 3$
- C $y = (x+3)^2 - 2$
- D $y = (x+2)^2 - 3$

___ 32 What function models the graph below?



A $y = (x+4)^2 + 2$

B $y = (x+2)^2 + 4$

C $y = (x-4)^2 + 2$

D $y = (x-4)^2 - 2$

___ 33 Use the second difference to determine which equation models the table below:

x	-3	-2	-1	0	1	2	3	4
y	28	12	0	-8	-12	-12	-8	0

A $f(x) = (x-4)(x+1)$

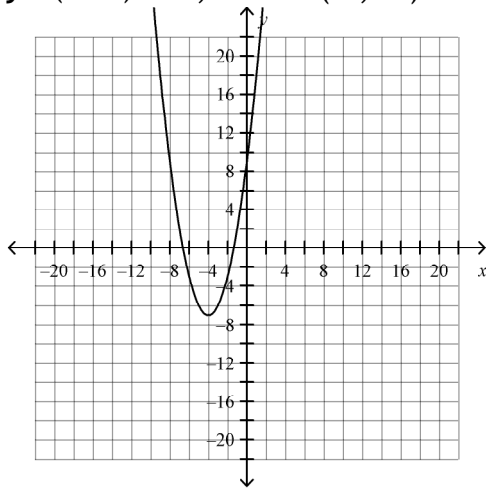
B $f(x) = 4(x-4)(x+1)$

C $f(x) = 2(x+4)(x-1)$

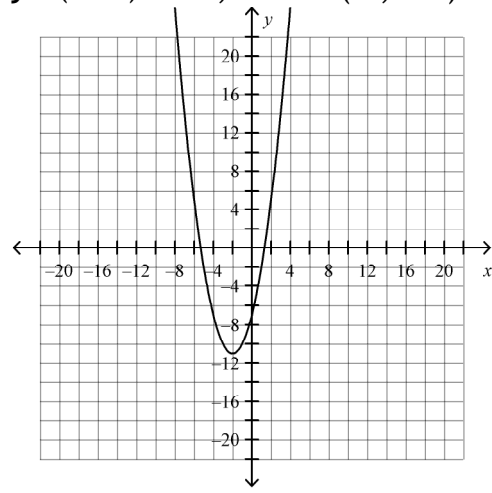
D $f(x) = 2(x-4)(x+1)$

___ 34 Convert $y=x^2+4x-7$ to vertex form, identify the vertex and the graph.

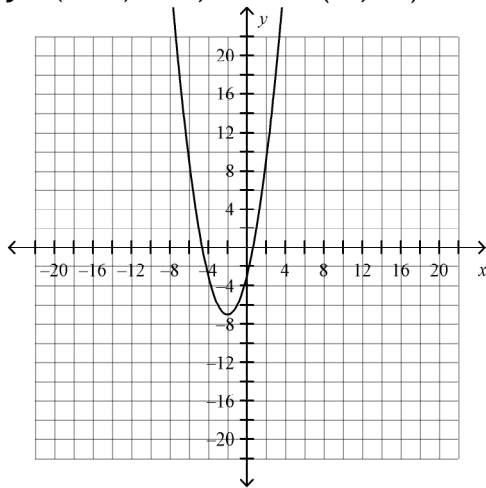
A $y=(x+4)^2-7$; vertex $(-4, -7)$



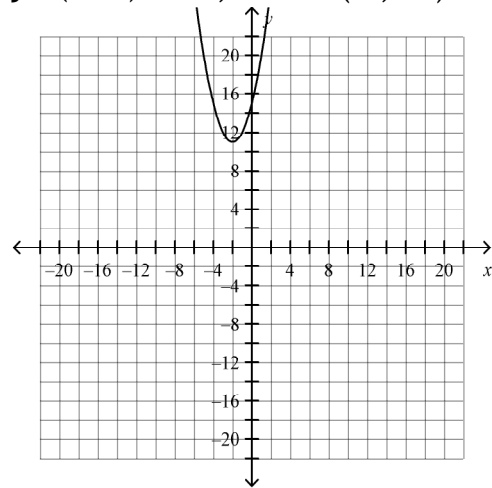
C $y=(x+2)^2-11$; vertex $(-2, -11)$



B $y=(x+2)^2-7$; vertex $(-2, -7)$

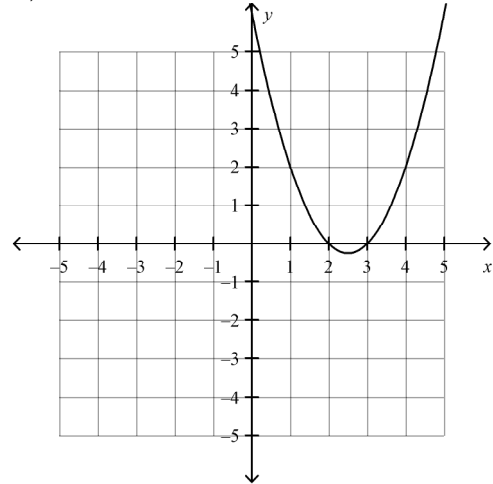
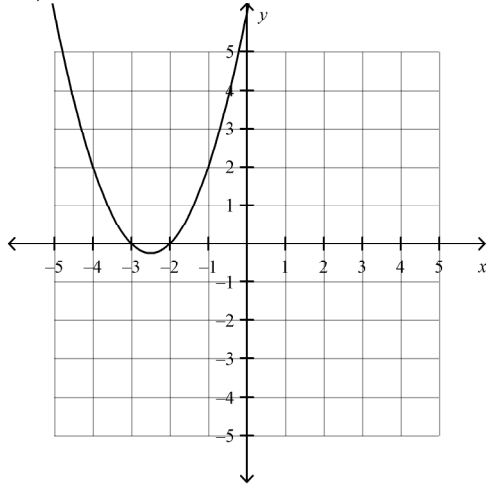


D $y=(x+2)^2+11$; vertex $(-2, 11)$



___ 35 Convert $y = x^2 + 5x - 6$ to factored form, identify the x-intercepts and the graph.

- A $y = (x + 3)(x + 2)$; x-ints (0, -3)(0, -2) C $y = (x - 3)(x - 2)$; x-ints (0, 3)(0, 2)



- B $y = (x + 6)(x - 1)$; x-ints (0, -6)(0, 1) D $y = (x - 6)(x + 1)$; x-ints (0, 6)(0, -1)

