# Unit 3 Quadratics EOC Review

## Factoring and Solving

1.
Which is a factor of $x^2 - 11x + 24$?

A. $x+3$ (B.) $x-3$ C. $x+4$ D. $x-4$

$(x-3)(x-8)$

2.
Which of the following is one of the factors of the expression below?

$4x^2 - 25$ * Difference of Squares

A. $(4x-5)$ B. $(2x+1)$

C. $(4x-1)$ (D.) $(2x-5)$

3.
Which shows the polynomial $8x^2 + 16x + 8$ completely factored? * Look for GCF

A. $(4x+4)^2$ B. $(4x+4)(2x+2)$

(C.) $8(x+1)^2$ D. $8(x+1)(x-1)$

$8(x^2+2x+1)$

4.
Written in factored form, the trinomial $2x^2 - 3x - 5$ is equivalent to

A. $(2x-1)(x+5)$ B. $(2x+5)(x-1)$

(C.) $(2x-5)(x+1)$ D. $(2x+1)(x-5)$

$(2x^2+2x-5x-5)$

$2x(x+1)-5(x+1)$

-10, -5, 2, -3

5.
If $(x-3)$ and $(x+7)$ are the factors of the trinomial $x^2 + ax - 21$, what is the value of $a$?

A. $-3$ B. $-4$ C. 7 (D.) 4

$(x-3)(x+7)$

$x^2 + 7x - 3x - 21$

6.
What is the solution set of the equation $x^2 - 3x - 10 = 0$? * Factor 1st

$(x-5)(x+2)=0$

* OR substitute answer choices

(A.) $(5, -2)$ B. $(-5, -2)$

C. $(5, 2)$ D. $(-5, 2)$

7.
The larger root of the equation $(x+4)(x-3) = 0$ is

A. $-4$ B. $-3$ (C.) 3 D. 4

8.
What is the solution set of the equation $3x^2 = 48$?

* Solve by SQ RT

A. $\{-2, -8\}$ B. $\{2, 8\}$ $x^2 = 16$

(C.) $\{4, -4\}$ D. $\{4, 4\}$

9.
The solution to the quadratic equation $2x^2 + 5x - 1 = 0$ is

(1) Need the opposite of b

(2) Discriminant

A. $\frac{5 \pm \sqrt{17}}{4}$ B. $\frac{-5 \pm \sqrt{17}}{4}$

C. $\frac{5 \pm \sqrt{33}}{4}$ (D.) $\frac{-5 \pm \sqrt{33}}{4}$

$b^2 - 4ac$

$(5)^2 - 4(2)(-1)$

$25 - 8(-1)$

$25 + 8$

10.
The roots of the equation $2x^2 - 8x = 0$ are

* GCF, FACTOR 1st

A. $-2$ and 2 B. 0 and $-4$

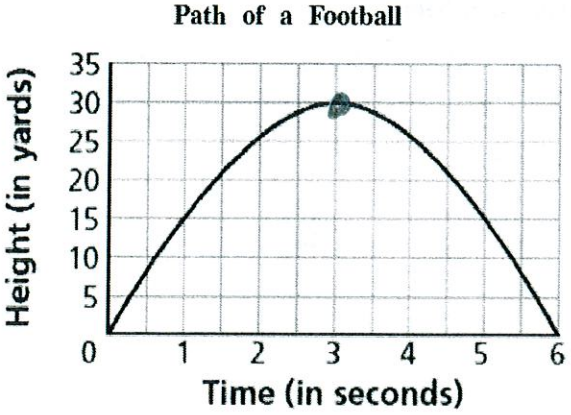
C. 0, $-2$, and 2 (D.) 0 and 4

$2x(x-4) = 0$

## Applications – Word Problems

1.

The graph below shows the path of a football that was kicked during a game.




What was the maximum height of the football during the kick?

A. 3 yards
B. 6 yards
C. 30 yards
D. 35 yards

2.

A ball is thrown straight up at an initial velocity of 54 feet per second. The height of the ball $t$ seconds after it is thrown is given by the formula $h(t) = 54t - 12t^2$. How many seconds after the ball is thrown will it return to the ground?

A. 9.2
B. 6
C. 4.5
D. 4

* Ground = Quad Formula
* Rewrite in Standard Form

$h(t) = -12t^2 + 54t + 0$

$b^2 - 4ac$

$(54)^2 - 4(-12)(0)$

$(54)^2$

2916

2R

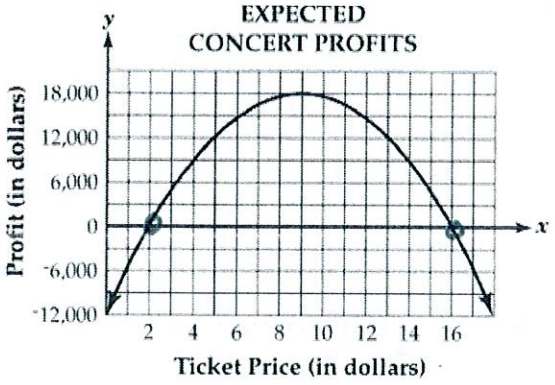
$\frac{-54 \pm \sqrt{2916}}{2(-12)}$

$\frac{-54+54}{-24}$ $\quad$ $\frac{-54-54}{-24}$

0

3.

The graph below models the relationship between the ticket price for a concert and the expected profits.




Which of these *best* describes the zero(s) of this function?

A. 9 is the zero, and indicates when profit is at the maximum

B. −12,000 is the zero, and indicates the cost to put on the concert

C. 2 and 16 are the zeros, and indicate the ticket price for which the profit is 0

D. 2 and 16 are the zeros, and indicate the number of tickets sold for which the profit is 0

4.

A cliff diver on a Caribbean island jumps from a height of 105 feet, with an initial upward velocity of 5 feet per second. An equation that models the height, h($t$), above the water, in feet, of the diver in time elapsed, $t$, in seconds, is $h(t) = -16t^2 + 5t + 105$. How many seconds, to the *nearest hundredth*, does it take the diver to fall 45 feet below his starting point?

A. 1.45
B. 1.84
C. 2.10
D. 2.72

$45 = -16t^2 + 5t + 105$

$0 = -16t^2 + 5t + 60$

$b^2 - 4ac$

$5^2 - 4(-16)(60)$

3865

2R

$\frac{-5 \pm \sqrt{3865}}{2(-16)}$

+ $\quad$ −

-1.79 $\quad$ 2.09

## Transformations

1.
Which of the following *most* accurately describes the translation of the graph $y = (x+3)^2 - 2$ to the graph of $y = (x-2)^2 + 2$?

* compare vertexs
① (-3, -2)
② (2, 2)

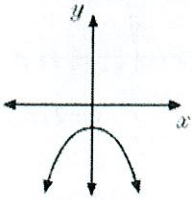
(A.) up 4 and 5 to the right

B. down 2 and 2 to the right

C. down 2 and 3 to the left

D. up 4 and 2 to the left

2.
Which equation can represent the parabola in the diagram?




A. $y = -x^2$

~~B.~~ $y = x^2$

~~C.~~ $y = x^2 - 3$ } NO Reflection

(D.) $y = -x^2 - 3$

Down 3
y int

3.
Consider the graph of the equation $y = ax^2 + bx + c$, when $a \neq 0$. If a is multiplied by 3, what is true of the graph of the resulting parabola?

A. The vertex is 3 units above the vertex of the original parabola. C

B. The new parabola is 3 units to the right of the original parabola. h

C. The new parabola is wider than the original parabola.

(D.) The new parabola is narrower than the original parabola.

tall and skinny

4.
Emily graphed the function $y = x^2 + 2$. Mark graphed $y = 0.5x^2 + 2$. If they both used the same grid scale, which statement describes Mark's graph compared to Emily's graph?

$y = .5x^2 + 2$
$y = x^2 + 2$

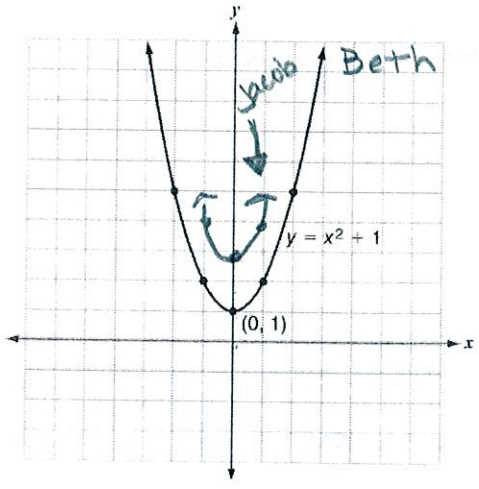
(A.) Mark's graph is wider.

B. Mark's graph is narrower. ↑ shrink vs

C. Mark's graph has a lower y-intercept. No shrink

D. Mark's graph has a higher y-intercept.

5.
Beth and Jacob are graphing two equations on a coordinate grid. Beth has graphed the equation $y = x^2 + 1$.




If Jacob graphs $y = x^2 + 3$, where will his graph be in relation to the graph Beth made?

(A.) 2 units up

B. 3 units up

C. 2 units to the left

D. 3 units to the right

6.
Which equation represents the graph of $y = x^2$ translated 1 unit right and 2 units down?

A. $y = -(x-1)^2 - 2$ Reflect Right Down

(B.) $y = (x-1)^2 - 2$

C. $y = -(x+1)^2 + 2$ Reflect Left Up

D. $y = (x+1)^2 - 2$ Left Down

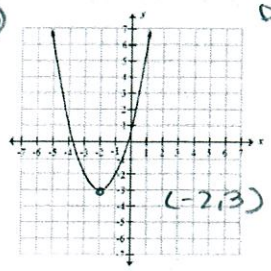
# Graphing and Characteristics

**1.** Which graph *best* represents $y = (x + 2)^2 - 3$?

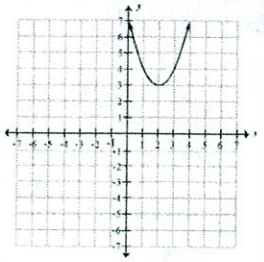
V: (-2, -3)

= down 3

A.




B.



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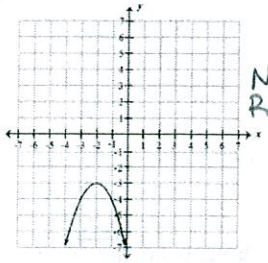
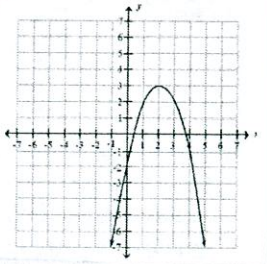



D.

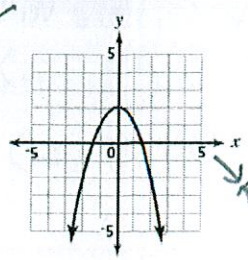


**2.** What is the graph of the equation?

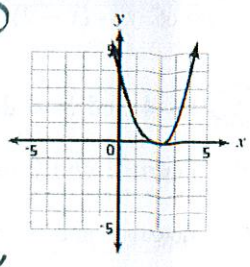
$y = x^2 - 4x + 4$

$x = \frac{-b}{2a} = \frac{4}{2(1)} = 2$

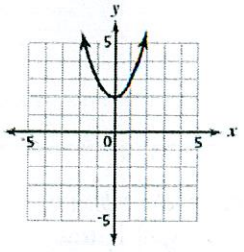
A.



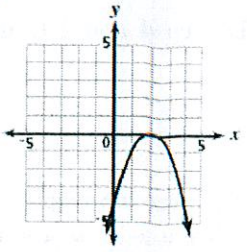

B.



C.



D.



**3.** Which quadratic function, when graphed, has $x$-intercepts of 4 and $-3$?

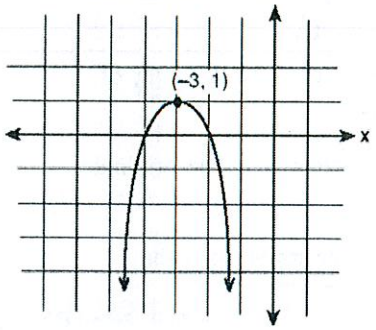
A. $y = (x - 3)(x + 4)$

B. $y = (x + 3)(2x - 8)$

C. $y = (3x - 1)(4x + 1)$

D. $y = (3x + 1)(8x - 2)$

**4.** Which equation represents the parabola shown in the accompanying graph?




A. $f(x) = (x + 1)^2 - 3$ NO Reflection

B. $f(x) = -(x - 3)^2 + 1$ Need opposite of x

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

D. $f(x) = -(x - 3)^2 - 3$ NO y value of vertex

**5.** What is the minimum point of the graph of the equation $y = 2x^2 + 8x + 9$?

$x = \frac{-b}{2a}$

$= \frac{-8}{2(2)}$

$= \frac{-8}{4}$ $x = -2$

A. (2, 33)

B. (2, 17)

C. (−2, −15)

D. (−2, 1)

**6.** What is the vertex of the graph of the equation $y = 3x^2 + 6x + 1$?

$x = \frac{-b}{2a}$

$= \frac{-6}{2(3)}$

$= \frac{-6}{6} = -1$

A. (−1, −2)

B. (−1, 10)

C. (1, −2)

D. (1, 10)

**7.** When $f(x) = x^2 - 4x + 7$ is written in the form $f(x) = (x - 2)^2 + 3$, which properties of the graph are revealed?

A. Axis of symmetry, maximum

B. Axis of symmetry, minimum

C. Zeros, maximum

D. Zeros, minimum

**8.** What is the $y$-intercept of the graph of the equation $y = x^2 - 2x + 3$? ← c value in standard form

A. 1 B. 2 C. 3 D. −2

y int is when x = 0