

Semester 2 Exam Practice – Quadratics
(Multiple Choice 20-25) + 3 Constructed Response (one multi-part)

20. What are the solutions of the equation?

$$(x + 4)(x - 12) = 0$$

- a. $x = 4$ and $x = -12$
- b. $x = -4$ and $x = 12$
- c. $x = -36$ and $x = 36$
- d. $x = -8$ and $x = 2$

21. Juan correctly solves one of the following equations. His solutions are $x = -1$ and $x = 4$. Which equation did Juan solve?

- a. $6x^2 - 18x = -24$
- b. $6x^2 + 18x = 24$
- c. $6x^2 - 18x = 24$
- d. $6x^2 + 18x = -24$

22. Describe how the graph of the parent function $f(x) = x^2$ would be transformed if it were changed to $f(x) = (x - 6)^2 - 3$.

- a. It would be translated 6 units left and 3 units down.
- b. It would be translated 6 units left and 3 units up.
- c. It would be translated 6 units right and 3 units up.
- d. It would be translated 6 units right and 3 units down.

23. What are the zeroes of the function?

$$g(x) = x^2 + 6x - 27$$

- a) $x = -9, x = -3$
- b) $x = 9, x = -3$
- c) $x = -9, x = 3$
- d) $x = 9, x = 3$

24. A football is kicked from the ground with an initial velocity of 74 ft/s. The height of the football over time can be represented by the function $h(t) = -16t^2 + 74t$. What does the y-value of the vertex represent in this scenario?

- a) the maximum height reached by the football
- b) the time when the football hits the ground
- c) the initial height of the football when it is kicked
- d) the time it takes for the football reaches its maximum height

25. Given the following function, what are the coordinates of the vertex?

$$h(x) = 3(x - 5)^2 + 2$$

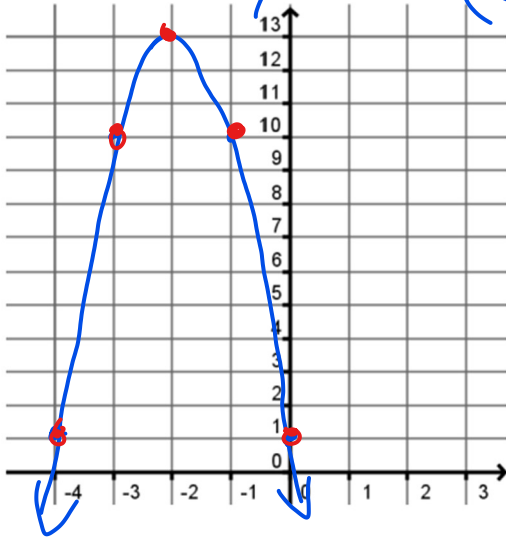
- a. (3, 2)
- b. (2, 3)
- c. (5, 2)
- d. (-5, 2)

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Graph the quadratic function using 5 points. Label your axis of symmetry and vertex.

$$f(x) = -3x^2 - 12x + 1.$$

$AoS = -2$
 $vertex = (-2, 13)$
 $y\text{-int} = (0, 1)$



An arrow is shot from a 80 ft platform with an initial velocity of 64 feet per second. The scenario can be represented by the function $h(t) = -16t^2 + 64t + 80$.

How long will it take for the arrow to hit the ground?
Round to the nearest hundredth if necessary.

$$0 = -16t^2 + 64t + 80$$

$$0 = t^2 - 4t - 5$$

$$0 = (t-5)(t+1)$$

$t-5=0$
 $t=5$
 $t+1=0$
 $t=-1$ (crossed out)
5 seconds

-5
 -5
 -4
 1

Solve each equation. If necessary, leave your answer as a decimal, rounded to the nearest hundredth. Please show all your work.

a) $x^2 + 5x + 6 = 0$

6
 2
 3
 5

$$(x+2)(x+3) = 0$$

$$x = -2 \text{ or } -3$$

b) $x^2 + 6x = -5$

$$x^2 + 6x + 9 = -5 + 9$$

$$\sqrt{(x+3)^2} = \sqrt{4}$$

$$x+3 = \pm 2$$

$$x = -1 \text{ or } -5$$

c) $2x^2 + 7 = -3x$

$$2x^2 + 3x + 7 = 0$$

$$x = \frac{-3 \pm \sqrt{9 - 4(2)(7)}}{2(2)}$$

$$x = \frac{-3 \pm \sqrt{9 - 56}}{4}$$

No Real Solutions

$$x = \frac{-3 \pm \sqrt{-47}}{4}$$