

11U3 - Zeros of Quadratics Practice Quiz

Multiple Choice

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

- _____ 1. Which of the following are roots of the equation $x^2 - 3x - 28 = 0$?
- | | |
|-----------------|-----------------|
| a. $x = -4, 7$ | c. $x = -7, 4$ |
| b. $x = -28, 0$ | d. $x = -24, 4$ |
- _____ 2. Which of the following are approximate roots of the equation $2x^2 - 13x + 8 = 0$?
- | | |
|--------------------------|----------------------------|
| a. $x \doteq 0.4, 0.67$ | c. $x \doteq 1.38, 11.63$ |
| b. $x \doteq 0.69, 5.81$ | d. $x \doteq -13.13, 3.25$ |
- _____ 3. A model rocket is launched off the top of a table. The height of the rocket is given by the function $h(t) = -4.9t^2 + 92t + 1.2$, where $h(t)$ is the height in metres and t is the time in seconds. How long will it take for the rocket to reach the ground?
- | | |
|------------|-----------------------|
| a. 0.13 s | c. 18.79 s |
| b. 18.76 s | d. 0.13 s and 18.79 s |
- _____ 4. Which of the following are roots of the equation $-3x^2 + 6x + 105 = 0$?
- | | |
|----------------|--------------------|
| a. $x = -7, 5$ | c. $x = -5, 3, 7$ |
| b. $x = -5, 7$ | d. $x = -5, -3, 7$ |
- _____ 5. Barbara hit a softball with a bat. The height of the ball is given by the function $h(t) = -4.9t^2 + 30t + 0.8$, where $h(t)$ is the height in metres and t is the time in seconds. How long will it take for the ball to reach the ground?
- | | |
|-----------|-----------|
| a. 0.8 s | c. 0.03 s |
| b. 3.06 s | d. 6.15 s |

Provide clear solutions to the following problems:

6. Determine the roots of the equation $-2x^2 + 4x + 96 = 0$ by factoring.
7. Use the quadratic formula to determine each of the roots of $-7x^2 - 23x = -10$ to two decimal places.
8. Heidi owns a business that sells photographs. The profit function for her business can be modelled by the equation $P(x) = -0.5x^2 + 5x - 7$, where x is the quantity sold, in thousands, and $P(x)$ is the profit in thousands of dollars. How many photos must Heidi sell in order for her business to break even?
9. Stephanie owns a business that sells greeting cards. The profit function for her business can be modelled by the equation $P(x) = -0.5x^2 + 8x - 9.3$, where x is the quantity sold, in thousands, and $P(x)$ is the profit in thousands of dollars. How many cards must Stephanie sell in order for her business to break even?