

Algebra 1: Solving Quadratic Equations & The Quadratic Formula



Name: _____ Date: _____

Part A: Solve each quadratic equation below using factoring or the quadratic formula. Select the correct solution set.

1. Find the real roots of the quadratic equation by factoring: $x^2 - 5x - 24 = 0$

- A. $x = -8$ and $x = 3$
- B. $x = 8$ and $x = -3$
- C. $x = 6$ and $x = -4$
- D. $x = -6$ and $x = 4$

2. For the quadratic equation $2x^2 - 4x + 5 = 0$, what is the value of the discriminant $D = b^2 - 4ac$, and what does it reveal about the roots?

- A. $D = 56$; two distinct rational real roots
- B. $D = -24$; no real roots (two complex conjugate roots)
- C. $D = 0$; exactly one repeated real root
- D. $D = 24$; two irrational real roots

3. A projectile's height in feet after t seconds is modeled by $h(t) = -16t^2 + 64t$. At what positive time t does the projectile strike the ground ($h = 0$)?

- A. $t = 2$ seconds
- B. $t = 4$ seconds
- C. $t = 8$ seconds
- D. $t = 16$ seconds

Part B: Quadratic Structure Fluency. Fill in the missing numerical coefficient or root for each step.

Word bank: 49, 7, -2, 0, 9

1. For $x^2 + 6x + 9 = 0$, the trinomial is a perfect square trinomial $(x + 3)^2$, yielding the single repeated root $x = -3$ where the discriminant equals _____.

2. To complete the square for $x^2 + 14x = 0$, add $(14 / 2)^2 =$ _____ to both sides of the equation.

3. Factoring $2x^2 + 5x - 7 = 0$ into $(2x + 7)(x - 1) = 0$, one integer root is $x = 1$ and the other is _____ / 2.

4. In the standard quadratic formula $x = (-b \pm \sqrt{b^2 - 4ac}) / (2a)$, if $b = -4$ and $a = 1$, then the leading term $-b$ evaluates to $+4$, and the denominator is $2(1) =$ _____ multiplied by -1 , equaling 2.