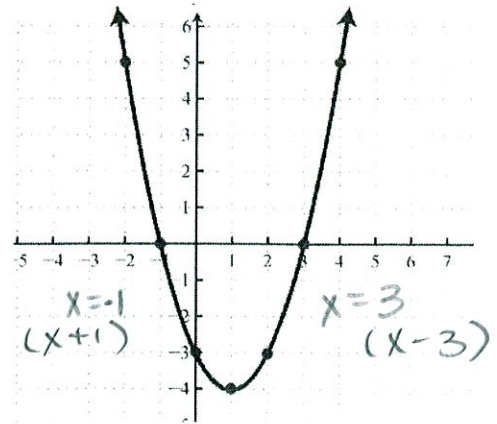


Unit 3A PRACTICE Test – Quadratic Equations

B 1. Which equation represents the graph at the right?

- (A) $y = (x + 1)(x + 3)$
- (B) $y = (x + 1)(x - 3)$
- (C) $y = (x - 1)(x + 3)$
- (D) $y = (x - 1)(x - 3)$



B 2. What are the zeros of the quadratic equation $(2x - 5)(3x + 1) = 0$?

- (A) $x = 5$ and -1
- (B) $x = 5/2$ and $-1/3$
- (C) $x = 2/5$ and -3
- (D) $x = -5/2$ and $-1/3$

C 3. Which equation has 4 as its ONLY zero?

- (A) $0 = x(x - 4)$ $y = 0$ $x = 4$
- (C) $0 = (x - 4)^2$ $(x - 4)(x - 4)$ $x = 4$
- (B) $0 = (x - 4)(x + 4)$ $x = 4$ $x = -4$
- (D) $0 = (x + 4)^2$ $(x + 4)(x + 4)$ $x = -4$

B 4. What value of b in $x^2 - bx + 36$ could be used to create a perfect square trinomial?

- (A) -6
 - (B) 12
 - (C) 6
 - (D) -12
- Handwritten notes:* "Neg in problem b is just the coeff.ient" with an arrow pointing to the minus sign in the equation. $(x - 6)(x - 6)$ and $x \frac{6}{36}$.

C 5. Which would be the next step in completing the square?

- $x^2 - 12x - 8 = 0$
 $x^2 - 12x + \frac{36}{2} = 8 + \frac{36}{2}$
 $(x - 6)^2$
- (A) Add 8 to both sides.
 - (C) Add 36 to both sides.
 - (B) Add 6 to both sides.
 - (D) Add 12 to both sides.

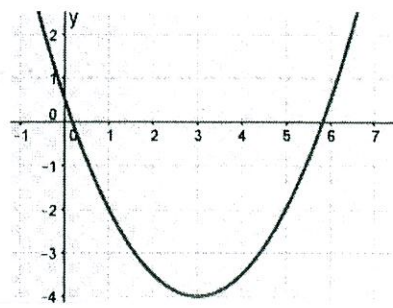
C

6. The value of the **discriminant** for a quadratic equation is **0**. What does this value tell you about the number of solution(s) of the quadratic equation?

- (A) There are no real solutions. -
- (B) There are two real solutions. +
- (C) There is one real solution.
- (D) There are an infinite amount of solutions. *Doesn't happen*

D

7. Which best describes the discriminant of the function whose graph is shown?



- (A) Discriminant equals $\frac{1}{4}$ and 5.8
- (B) Discriminant equals 2
- (C) Discriminant equals zero
- (D) Discriminant is positive *2 x int. 2 Real solutions*

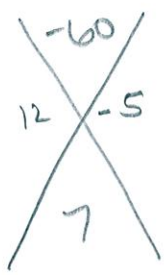
Solve each of the following quadratic equations by **factoring**. Show all work. Write your final answer in the blank.

$x = 0$ $x = \frac{-2}{3}$ 8. $15x^2 + 10x = 0$
 $5x(3x + 2) = 0$

$x = -3$ $x = -10$ 9. $x^2 + 13x + 30 = 0$
 $(x + 3)(x + 10) = 0$

$x = \frac{5}{3}$ $x = -4$ 10. $3x^2 + 7x - 20 = 0$

$(3x^2 + 12x)(-5x - 20) = 0$
 $3x(x + 4) - 5(x + 4) = 0$
 $(3x - 5)(x + 4) = 0$



$x = \pm \frac{5}{4}$ 11. $16x^2 - 25 = 0$

$(4x - 5)(4x + 5) = 0$

Continue to solve by factoring. Be sure to write your final answer in the blank.

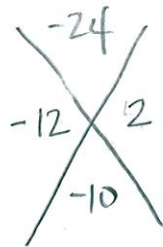
$X = \frac{1}{4}, X = \frac{3}{2}$ 12. $8x^2 - 10x = 3$

$8x^2 - 10x - 3 = 0$

$(8x^2 - 12x) + (2x - 3) = 0$

$4x(2x - 3) + 1(2x - 3) = 0$

$(4x + 1)(2x - 3) = 0$



$X = -5, 4$ 13. $4x^2 = -4x + 80$

$4x^2 + 4x - 80 = 0$

$4(x^2 + x - 20) = 0$

$4(x + 5)(x - 4) = 0$

Solve by taking square roots.

$X = 11, 3$ 14. $(x - 7)^2 = 16$

$x - 7 = \pm 4$

$x = 7 \pm 4$

$x = 7 + 4 \quad x = 7 - 4$

$x = 11 \quad x = 3$

$X = 7, 1$ 16. $6(x - 4)^2 - 2 = 52$

$6(x - 4)^2 = 54$

$(x - 4)^2 = 9$

$x - 4 = \pm 3$

$x = 4 \pm 3$

$x = 4 + 3 \quad x = 4 - 3$

$x = \pm \sqrt{5}$ 15. $5x^2 - 2 = 23$

$5x^2 = 25$

$x^2 = 5$

$x = 5 \pm 2\sqrt{2}$ 17. $3(x - 5)^2 = 24$

$(x - 5)^2 = 8$

$x - 5 = \pm \sqrt{8}$

4^2

$x = 5 \pm 2\sqrt{2}$

Solve the following quadratic equations by completing the square.

$X = -3 \pm 2\sqrt{5}$ 18. $x^2 + 6x - 11 = 0$

$x^2 + 6x = 11 + 9$

$(x + 3)^2 = 20$

$x + 3 = \pm \sqrt{20} \leftarrow 4$

$x = -3 \pm 2\sqrt{5}$

$X = 10, -2$ 19. $x^2 - 8x - 6 = 14$

$x^2 - 8x = 20 + 16$

$(x - 4)^2 = 36$

$x - 4 = \pm 6$

$x = 4 + 6$

$x = 4 \pm 6$

$x = 4 - 6$

Solve the following quadratic equations using the quadratic formula. Simplify all answers completely.

$$X = \frac{5 \pm \sqrt{85}}{2} \quad 20. \quad 3x^2 - 5x - 5 = 0$$

$$b^2 - 4ac$$

$$(-5)^2 - 4(3)(-5)$$

$$85 \text{ 2R}$$

$$\frac{5 \pm \sqrt{85}}{2(3)}$$

$$X = \frac{-1 \pm \sqrt{21}}{5} \quad 22. \quad 5x^2 + 2x = 4$$

$$5x^2 + 2x - 4 = 0$$

$$b^2 - 4ac$$

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

$$84 \text{ 2R}$$

$$\frac{-2 \pm \sqrt{84}}{2(5)}$$

$$\frac{-2 \pm 2\sqrt{21}}{10}$$

$$X = \frac{3 \pm 5\sqrt{5}}{2} \quad 21. \quad x^2 - 3x + 25 = 54$$

$$x^2 - 3x - 29 = 0$$

$$b^2 - 4ac$$

$$(-3)^2 - 4(1)(-29)$$

$$125 \text{ 2R}$$

$$\frac{3 \pm \sqrt{125}}{2(1)} = \frac{3 \pm 5\sqrt{5}}{2}$$

$$X = \frac{3 \pm 3\sqrt{11}}{5} \quad 23. \quad 5x^2 - 18 = 6x$$

$$5x^2 - 6x - 18 = 0$$

$$b^2 - 4ac$$

$$(-6)^2 - 4(5)(-18)$$

$$396 \text{ 2R}$$

$$\frac{6 \pm \sqrt{396}}{2(5)}$$

$$\frac{6 \pm 6\sqrt{11}}{10}$$

Solve using the method of your choice ☺

$$X = 10, 2 \quad 24. \quad x^2 - 12x - 4 = -24$$

$$x^2 - 12x + 20 = 0$$

$$(x - 10)(x - 2) = 0$$

FACTOR
CTS
Quad Formula

$$X = \pm \sqrt{3} \quad 25. \quad 12x^2 - 6 = 30$$

SQRT

$$12x^2 = 36$$

$$x^2 = 3$$

$$x = \pm \sqrt{3}$$