

Name: Key

Hour: _____

Sec. 3.7B: Solving Quadratics Review

Solve using the method of your choice. Show all of your work.

1. $5x^2 - 2x - 3 = 0$ $a=5, b=-2, c=-3$

$$x = \frac{2 \pm \sqrt{(-2)^2 - 4(5)(-3)}}{2(5)}$$

$$\frac{2 \pm \sqrt{64}}{10} = \frac{2 \pm 8}{10} = \frac{2+8}{10} \quad \frac{2-8}{10}$$
$$\frac{10}{10} = 1 \quad \frac{-6}{10} = -\frac{3}{5}$$

$$x = 1, -\frac{3}{5}$$

3. $3x^2 - 9x - 54 = 0$

$$x^2 - 3x - 18 = 0$$
$$(x-6)(x+3) = 0$$

$$x-6=0 \quad x+3=0$$

$$x = 6, -3$$

5. $x^2 + 12x + 36 = 5$

$$x^2 + 12x + 31 = 0$$

$$x = \frac{-12 \pm \sqrt{12^2 - 4(1)(31)}}{2(1)}$$

$$\frac{-12 \pm \sqrt{20}}{2} = \frac{-2 \pm 2\sqrt{5}}{2} = \boxed{-1 \pm \sqrt{5}}$$

$$\sqrt{20} = 2\sqrt{5}$$
$$\begin{matrix} 4 \\ \wedge \\ 5 \\ \wedge \\ 2 \end{matrix}$$

2. $x^2 + 5x + 5 = 0$ $a=1, b=5, c=5$

$$x = \frac{-5 \pm \sqrt{5^2 - 4(1)(5)}}{2(1)}$$
$$= \frac{-5 \pm \sqrt{45}}{2}$$

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

~~5~~ ← no options

$$\sqrt{45}$$
$$\begin{matrix} \wedge \\ *5 \\ \wedge \\ 3 \end{matrix}$$

4. $x^2 - x = 12$

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

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

$$x-4=0 \quad x+3=0$$

$$x = 4, -3$$

6. $x^2 - 11x + 24 = 0$

$$(x-8)(x-3) = 0$$

$$x = 3, 8$$

7. $x^2 + 15x + 24 = -32$

$$x^2 + 15x + 56 = 0$$

$$(x+7)(x+8) = 0$$

$$x = -7, -8$$

8. $x^2 + 7x + 11 = 0$

$$x = \frac{-7 \pm \sqrt{7^2 - 4(1)(11)}}{2(1)} = \boxed{\frac{-7 \pm \sqrt{5}}{2}}$$

9. $12x^2 = -4x$

$$12x^2 + 4x = 0$$

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

$$4x = 0 \quad 3x+1 = 0$$

$$x = 0, \quad x = -\frac{1}{3}$$

10. $(2x+1)(x-3) = 0$

$$2x+1=0 \quad x-3=0$$

$$x = -\frac{1}{2}, 3$$

11. $(x+5)^2 - 12 = 0$ $\sqrt{12} = 2\sqrt{3}$
 $\sqrt{(x+5)^2} = \sqrt{12}$ $\sqrt{3}$
 $2 \cdot 2$

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

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

12. $x^2 + 3x = 14$

$x^2 + 3x - 14 = 0$

$x = \frac{-3 \pm \sqrt{3^2 - 4(1)(-14)}}{2(1)}$

$x = \frac{-3 \pm \sqrt{65}}{2}$

$\sqrt{65}$
 $\sqrt{5 \cdot 13}$

13. $x^2 - 8x = -16$

$x^2 - 8x + 16 = 0$
 $(x-4)(x-4) = 0$

$x = 4$

14. $4x^2 + 8 = -3x$

$4x^2 + 3x + 8 = 0$

$x = \frac{-3 \pm \sqrt{3^2 - 4(4)(8)}}{2(4)}$

$x = \frac{-3 \pm \sqrt{-119}}{8}$

No real solutions

15. $6(x-4)^2 + 8 = 20$

$6(x-4)^2 = 12$

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

$x-4 = \pm \sqrt{2}$

$x = 4 \pm \sqrt{2}$

16. $6x^2 - 54 = 0$

$6(x^2 - 9) = 0$

$\frac{6}{6}(x+3)(x-3) = 0$

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

$x = 3, -3$

17. $3x^2 + 7x - 24 = -13x$

$3x^2 + 20x - 24 = 0$

$x = \frac{-20 \pm \sqrt{20^2 - 4(3)(-24)}}{2(3)}$

$= \frac{-20 \pm \sqrt{688}}{6} = \frac{-20 \pm 4\sqrt{43}}{6} = \frac{-10 \pm 2\sqrt{43}}{3}$

$\sqrt{688} = 4\sqrt{43}$
 $\sqrt{4 \cdot 172} = 2\sqrt{43}$
 $\sqrt{4 \cdot 43}$

18. $7x^2 - 10 = 25$

$7x^2 = 35$
 $\frac{7x^2}{7} = \frac{35}{7}$

~~$x^2 - 10x + 25 = 10$~~
 ~~$(x-5)^2 = 10$~~
 ~~$x-5 = \pm \sqrt{10}$~~
 ~~$x = 5 \pm \sqrt{10}$~~

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

19. $25x^2 = 121$

$\frac{25x^2}{25} = \frac{121}{25}$

$\sqrt{x^2} = \sqrt{\frac{121}{25}}$

$x = \pm \frac{11}{5}$

20. $2x^2 + 7x - 4 = 0$

$(2x^2 - 1x)(-8x - 4) = 0$

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

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

$x+4=0 \quad 2x-1=0$
 $x = -4, \frac{1}{2}$

~~$\frac{-8 \pm \sqrt{8}}{7}$~~