

Algebra Review Solving Quadratics

Name _____

PROBLEM SOLVING

Solve by Factoring

1.) $x^2 - 64 = 0$

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

$$x = -8, 8$$

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

$$(x-8)(x+2) = 0$$

$$x = 8, -2$$

3.) $x^2 + 3x = 40$

$$x^2 + 3x - 40 = 0$$

$$(x+8)(x-5) = 0$$

$$x = -8, 5$$

4.) $2x^2 + 3x + 1 = 0$

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

$$2x+1 = 0$$

$$x = -1$$

$$2x = -1$$

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

5.) $x^2 - 100 = 0$

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

$$x = 10, -10$$

6.) $x^2 + 6x = 0$

$$x(x+6) = 0$$

$$x = 0, x = -6$$

Solve by Square Roots

7.) $x^2 = 64$

$$x = \pm \sqrt{64}$$

$$x = \pm 8$$

8.) $\sqrt{4x^2} = \sqrt{81}$

$$2x = \pm 9$$

$$2x = 9 \quad 2x = -9$$

$$x = \frac{9}{2}, -\frac{9}{2}$$

9.) $x^2 + 7 = -300$

$$\sqrt{x^2} = \sqrt{-307}$$

$$x = \pm i\sqrt{307}$$

10.) $\sqrt{(x-5)^2} = \sqrt{36}$

$$x-5 = \pm 6$$

$$x-5 = 6 \quad x-5 = -6$$

$$x = 11 \quad x = -1$$

11. Solve by using the quadratic formula:

1. $x^2 + 3x + 2 = 0$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-3 \pm \sqrt{3^2 - 4(1)(2)}}{2(1)}$$

$$\frac{-3 \pm \sqrt{9-8}}{2} = \frac{-3 \pm \sqrt{1}}{2}$$

$$\frac{-3+1}{2}$$

$$\frac{-3-1}{2}$$

$$\frac{-2}{2} = -1$$

$$\frac{-4}{2} = -2$$

$$x = -2, -1$$

12. $4x^2 - 8x = 1$

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

$$\frac{-8 \pm \sqrt{(-8)^2 - 4(4)(-1)}}{2(4)}$$

$$\frac{8 \pm \sqrt{64+16}}{8}$$

$$\frac{8 \pm \sqrt{80}}{8} = \frac{8 \pm 4\sqrt{5}}{8}$$

$$\frac{2 \pm \sqrt{5}}{2}$$

13. $x^2 + 8x = 0$

$$-8 \pm \sqrt{8^2 - 4(1)(0)}$$

$$\frac{-8 \pm \sqrt{64}}{2}$$

$$\frac{-8 \pm 8}{2} = \frac{-8+8}{2} = \frac{0}{2} = 0$$

$$\frac{-8-8}{2} = \frac{-16}{2} = -8$$

$$x = 0, -8$$

Solve each equation any way you want. Show your work.

4. $x^2 + 11x + 18 = 0$

$$(x+9)(x+2) = 0$$

$$x = -9, -2$$

15. $x^2 + 2x + 1 = 15$

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

$$x^2 + 2x = 14$$

$$x^2 + 2x + 1 = 14 + 1$$

$$(x+1)^2 = 15$$

$$x+1 = \pm \sqrt{15}$$

$$x = -1 \pm \sqrt{15}$$

16. $7x^2 - 9x + 1 = 0$

$$\frac{-9 \pm \sqrt{(-9)^2 - 4(7)(1)}}{2(7)}$$

$$\frac{9 \pm \sqrt{81-28}}{14}$$

$$14$$

$$\frac{9 \pm \sqrt{53}}{14}$$

$$14$$

$$\sqrt{(x+2)^2} = \sqrt{36}$$

$$(x+2) = \pm 6$$

$$x+2=6 \quad x+2=-6$$

$$x=4 \quad x=-8$$

18. $x^2 - 10x + 25 = 0$

$$\sqrt{(x-5)^2} = \sqrt{0}$$

$$x-5=0$$

$$x=5$$

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

$$\frac{-3 \pm \sqrt{3^2 - 4(1)(7)}}{2(1)} = \frac{-3 \pm \sqrt{9-28}}{2}$$

$$\frac{-3 \pm \sqrt{-19}}{2} = \frac{-3 \pm i\sqrt{19}}{2}$$

$$\sqrt{x^2} = \sqrt{36}$$

$$x = \pm 6$$

21. $x^2 - 6x + 2 = 0$

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

$$(x-3)^2 = 7$$

$$x-3 = \pm\sqrt{7}$$

$$x = 3 \pm \sqrt{7}$$

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

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

$$x = 4, 1$$

REASONING:

20.) Explain why $x^2 = -81$ DOES NOT have a solution. *can't have a square root of a neg number*

21.) Which method can't you use to solve this problem? $x^2 - 47 = 0$

Circle one: Factoring Square Roots Quadratic Formula

Explain why: *no a difference or not work*

22.) Which method can't you use to solve this problem? $x^2 + 7x = 0$

Circle one: Factoring Square Roots Quadratic Formula

Explain why:

23.) Which method can you use to solve all quadratic equations?

Circle one: Factoring Square Roots Quadratic Formula

Explain why:

24.) What are the two mistakes in setting up the quadratic formula:

$$x = \frac{-1 \pm \sqrt{(-1)^2 - 4(2)(6)}}{2(2)} - 6$$

Solve: $2x^2 - x - 6 = 0$