

Name: _____ Date: _____

key

Unit #1B Review - Version C

Solve each quadratic equation using the indicated method.

1. Quadratic Formula: $3x^2 = 7x - 3$

$$3x^2 - 7x + 3 = 0$$

$$\frac{-(-7) \pm \sqrt{(-7)^2 - 4(3)(3)}}{2(3)}$$

$$\frac{7 \pm \sqrt{13}}{6}$$

$$\boxed{\frac{7 + \sqrt{13}}{6} - \frac{7 - \sqrt{13}}{6}}$$

2. Completing The Square: $x^2 + 10x + 29 = 0$

$$x^2 + 10x + 29 = 0$$

$$x^2 + 10x = -29$$

$$x^2 + 10x + 25 = -29 + 25$$

$$(x+5)^2 = -4$$

$$x+5 = \pm 2i$$

$$\boxed{x = -5 \pm 2i}$$

Solve each quadratic equation using the indicated method.

3. Factoring: $2x^2 + 5x - 12 = 0$

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

$$2x+3=0 \quad ; \quad x-4=0$$

$$2x = -3$$

$$\boxed{x = -\frac{3}{2} \quad ; \quad x = 4}$$

4. Square Roots: $2(x+1)^2 - 10 = -28$

$$2(x+1)^2 - 10 = -28$$

$$2(x+1)^2 = -18$$

$$(x+1)^2 = -9$$

$$x+1 = \pm 3i$$

$$\boxed{x = -1 \pm 3i}$$

Find the discriminant of each quadratic equation then state the number and type of solutions.

5. $2x^2 - 5 = -9x$

$$2x^2 + 9x - 5 = 0$$

$$(9)^2 - 4(2)(-5) = \sqrt{121}$$

2 real

6. $5x^2 = 10x - 6$

$$5x^2 - 10x + 6 = 0$$

$$(-10)^2 - 4(5)(6) = \sqrt{-20}$$

2 imaginary

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

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

$$(4)^2 - 4(-2)(-2) = \sqrt{0}$$

1 real

8. $2x^2 = 6$

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

$$(0)^2 - 4(2)(-6) = \sqrt{48}$$

2 real

Simplify the following expressions.

9. $\frac{-9 \pm \sqrt{45}}{6}$

$$\frac{-9 \pm 3\sqrt{5}}{6} = \boxed{\frac{-3 \pm \sqrt{5}}{2}}$$

10. $\frac{-12 \pm \sqrt{-48}}{16}$

$$\frac{-12 \pm 4i\sqrt{3}}{16} = \boxed{\frac{-3 \pm \sqrt{3}i}{4}}$$

Solve each equation using the best method.

11. $3x^2 + 19 = 28$

$3x^2 = 9$

$x^2 = 3$

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

12. $(x-2)^2 + 35 = -14$

$(x-2)^2 = -49$

$x-2 = \pm 7i$

$$\boxed{x = 2 \pm 7i}$$

13. $x^2 + 10x = -29$

$x^2 + 10x + 25 = -29 + 25$

$(x+5)^2 = -4$

$x+5 = \pm 2i$

$$\boxed{x = -5 \pm 2i}$$

14. $x^2 + 3x - 28 = 0$

$(x+7)(x-4) = 0$

$x+7=0 ; x-4=0$

$$\boxed{x = -7 ; x = 4}$$

15. $3x^2 + 8x + 2 = 0$

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

$$\frac{-8 \pm \sqrt{40}}{6} = \frac{-8 \pm 2\sqrt{10}}{6} = \boxed{\frac{-4 \pm \sqrt{10}}{3}}$$

16. $x^2 - 8x + 22 = 12$

$x^2 - 8x = -10$

$x^2 - 8x + 16 = -10 + 16$

$(x-4)^2 = 6$

$x-4 = \pm\sqrt{6}$

$$\boxed{x = 4 \pm \sqrt{6}}$$

17. $3x^2 - 7x = 10$

$3x^2 - 7x - 10 = 0$

$$\frac{-(-7) \pm \sqrt{(-7)^2 - 4(3)(-10)}}{2(3)}$$

$$\frac{7 \pm \sqrt{169}}{6} = \frac{7 \pm 13}{6} = \boxed{\frac{10}{3}, -1}$$

18. $\frac{3}{8}x^2 + 42 = 36$

$\frac{3}{8}x^2 = -6$

$3x^2 = -48$

$x^2 = -16$

$$\boxed{x = \pm 4i}$$