Name: Key Date: _____

Unit #1B Review

Solve each quadratic equation using the indicated method.

1. *Quadratic Formula*: $5x^2 = -6x - 1$

$5x^2 + 6x + 1 = 0$ $a = 5$ $b = 6$ $c = 1$ (+6x +1)

$$\frac{-(6) \pm \sqrt{(6)^2 - 4(5)(1)}}{2(5)}$$

$$\frac{-6 \pm \sqrt{16}}{10}$$

$\frac{-6 \pm 4}{10} = \frac{-2}{10}, \frac{-10}{10} = \boxed{-\frac{1}{5}, -1}$

2. *Completing The Square*: $x^2 + 4x - 12 = 0$

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

$x^2 + 4x = 12$

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

$(x+2)^2 = 16$

$x + 2 = \pm 4$

$x = -2 \pm 4$

$\boxed{x = 2, -6}$

Solve each quadratic equation using the indicated method.

3. *Factoring*: $3x^2 - 17x - 6 = 0$

$(3x + 1)(x - 6) = 0$

$3x + 1 = 0$; $x - 6 = 0$

$3x = -1$; $x = 6$

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

4. *Square Roots*: $2(x-3)^2 + 10 = 24$

$2(x-3)^2 + 10 = 24$

$2(x-3)^2 = 14$

$(x-3)^2 = 7$

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

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

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

5. $2x^2 + 8 = 8x$

$2x^2 - 8x + 8 = 0$

$(-8)^2 - 4(2)(8) = 0$; 1 real

6. $3x^2 = 10x + 8$

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

$(-10)^2 - 4(3)(-8) = 196$; 2 real

7. $-6x^2 + 5x = 5$

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

$(5)^2 - 4(-6)(-5) = -95$; 2 imaginary

8. $5x^2 = 2x$

$5x^2 - 2x = 0$

$(-2)^2 - 4(5)(0) = 4$; 2 real

Simplify the following expressions.

9. $\frac{-6 \pm \sqrt{20}}{8}$ $= \frac{-6}{8} \pm \frac{2\sqrt{5}}{8}$

$\frac{-3}{4} \pm \frac{\sqrt{5}}{4}$

10. $\frac{-12 \pm \sqrt{-45}}{3}$ $\frac{-12}{3} \pm \frac{3i\sqrt{5}}{3}$

$-4 \pm i\sqrt{5}$

Solve each equation using the best method.

11. $2x^2 + 28 = 4$

$2x^2 = -24$

$x^2 = -12$

$x = \pm 2i\sqrt{3}$

12. $(x+2)^2 - 40 = 9$

$(x+2)^2 = 49$

$x+2 = \pm 7$

$x = -2 \pm 7$

$x = 5, -9$

13. $x^2 + 8x = -4$

$x^2 + 8x + 16 = -4 + 16$

$(x+4)^2 = 12$

$x+4 = \pm 2\sqrt{3}$

$x = -4 \pm 2\sqrt{3}$

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

$(x+5)(x-1) = 0$

$x+5=0$; $x-1=0$

$x = -5$; $x = 1$

15. $5x^2 + 3x + 1 = 0$

$\frac{-(3) \pm \sqrt{(3)^2 - 4(5)(1)}}{2(5)}$

$\frac{-3 \pm \sqrt{-11}}{10}$

$\frac{-3}{10} \pm \frac{\sqrt{11}}{10} i$

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

$x^2 - 2x + 8 = 0$

$x^2 - 2x = -8$

$x^2 - 2x + 1 = -8 + 1$

$(x-1)^2 = -7$

$x - 1 = \pm i\sqrt{7}$

$x = 1 \pm i\sqrt{7}$

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

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

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

$2x+1=0$; $x-2=0$

$2x = -1$; $x = 2$

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

18. $\frac{2}{5}x^2 + 63 = 13$

$\frac{2}{5}x^2 = -50$

$2x^2 = -250$

$x^2 = -125$

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