Name: Key NC Math 3 Unit: 0 Day: 1

Objective: Solve quadratic equations through the Quadratic Formula.

Notes:

How to solve quadratic equations through the Quadratic Formula:

Step 1) Arrange the equation to look like: $ax^2 + bx + c = 0$

Step 2) Using the formula $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$, substitute $a, b, and\ c$ from the your equation in Step 1.

Step 3) Simplify the radical.

Optional notes here:

Examples:

1. $x^2 - 11x + 19 = -5$

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

$x = \frac{11 \pm \sqrt{121 - 4(1)(24)}}{2(1)} = \frac{11 \pm \sqrt{25}}{2}$

$x = \frac{11 \pm 5}{2} = \frac{11+5}{2} = \frac{16}{2} = 8$

$= \frac{11-5}{2} = \frac{6}{2} = 3$

$x = \{3, 8\}$

2. $2a^2 - 6a - 3 = 0$

$a = \frac{6 \pm \sqrt{36 - 4(2)(-3)}}{2(2)} = \frac{6 \pm \sqrt{60}}{4}$

$a = \frac{6 \pm 2\sqrt{15}}{4} = \frac{3 \pm \sqrt{15}}{2}$

$a = \left\{\frac{3-\sqrt{15}}{2}, \frac{3+\sqrt{15}}{2}\right\}$

Practice:

1. $x^2 + 6x + 13 = 0$

$x = \frac{-6 \pm \sqrt{36 - 4(1)(13)}}{2(1)}$

$x = \frac{-6 \pm \sqrt{-16}}{2} = \frac{-6 \pm 4i}{2}$

$x = \{-3+2i, -3-2i\}$

2. $-4k^2 - 8k - 3 = -3 - 5k^2$

$K^2 - 8K = 0 \rightarrow K^2 - 8K + 0 = 0$

$K = \frac{8 \pm \sqrt{64 - 4(1)(0)}}{2(1)} = \frac{8 \pm \sqrt{64}}{2}$

$K = \frac{8 \pm 8}{2} = \frac{8+8}{2} = \frac{16}{2} = 8$

$= \frac{8-8}{2} = \frac{0}{2} = 0$ $K = \{0, 8\}$

3. $b^2 + 5b - 35 = 3b$

$b^2 + 2b - 35 = 0$

$b = \frac{-2 \pm \sqrt{4 - 4(1)(-35)}}{2(1)}$

$b = \frac{-2 \pm \sqrt{144}}{2} = \frac{-2 \pm 12}{2}$

$= \frac{-2+12}{2} = \frac{10}{2} = 5$

$= \frac{-2-12}{2} = \frac{-14}{2} = -7$

$b = \{5, -7\}$

4. $7r^2 - 14r = -7$

$7r^2 - 14r + 7 = 0 \rightarrow 7(r^2 - 2r + 1) = 0$

$r = \frac{14 \pm \sqrt{196 - 4(7)(7)}}{2(7)}$

$r = \frac{14 \pm \sqrt{0}}{14} = \frac{14 \pm 0}{14} = 1$

$r = \frac{2 \pm \sqrt{4 - 4(1)(1)}}{2(1)}$

$r = \frac{2 \pm \sqrt{0}}{2} = \frac{2 \pm 0}{2} = 1$

$r = \{1\}$

Please submit this assignment electronically on Canvas. See directions on the Promethean Board.