Math Study Strategies

Using the Quadratic Formula

To solve a quadratic equation by using the quadratic formula:

1. **Rewrite** the equation in **standard form** ($ax^2 + bx + c = 0$).
2. If a **common factor** exists, divide both sides of the equation by that **factor.**
3. Use a chart like the one below to help you **identify the coefficients** a, b, and c.

a	b	c
?	?	?

4. **Substitute** the values into the **quadratic formula**.

$$x = \frac{-b \pm \sqrt{b^2 - 4(a)(c)}}{2a}$$

5. **Write** the right side of the equations in **simplest form** to express the solutions for x.

Example Problem

Solve the following equation: $4x^2 = 6x + 8$

$4x^2 = 6x + 8$

1. $4x^2 - 6x - 8 = 0$ — Rewrite the equation in standard form.

2. $2x^2 - 3x - 4 = 0$ — A common factor exists (2). Divide both sides of the equation by it.

3. Make a chart to identify the coefficients a, b, and c in the equation.

a	b	c
2	-3	-4

4. $x = \frac{-(-3) \pm \sqrt{(-3^2) - 4(2)(-4)}}{2(2)}$ — Substitute the values in the quadratic formula.

5. Write the right side of the equations in simplest form to express the solutions for x

$$x = \frac{3 \pm \sqrt{9+32}}{4}$$

$$x = \frac{3 \pm \sqrt{41}}{4}$$

$$x = \frac{3+\sqrt{41}}{4} \approx 2.35 \quad \text{or} \quad x = \frac{3-\sqrt{41}}{4} \approx -.85$$

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