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QUADRATIC FORMULA

Solving with the Quadratic Formula

Practice 1.

Solve for w.

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

1) Write the equation in standard form, $ax^2 + bx + c = 0$

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

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

2) List the values for a, b, and c.

$$1x^2 + 4x - 5 = 0$$

$$a = 1$$

$$b = 4$$

$$c = -5$$

3) Plug a, b, and c into the quadratic formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4 \cdot 1 \cdot -5}}{2 \cdot 1}$$

4) Simplify the equation using the order of operations, PEMDAS, or using a calculator (or Desmos Scientific Calculator online).

$$x = \frac{-4 \pm \sqrt{4^2 - 4 \cdot 1 \cdot -5}}{2 \cdot 1}$$

$$x = \frac{-4 \pm \sqrt{16 - 4 \cdot 1 \cdot -5}}{2 \cdot 1}$$

$$x = \frac{-4 \pm \sqrt{16 - -20}}{2 \cdot 1}$$

$$x = \frac{-4 \pm \sqrt{36}}{2 \cdot 1}$$

$$x = \frac{-4 \pm 6}{2 \cdot 1}$$

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

$$x = \frac{-4+6}{2} \quad \text{or} \quad x = \frac{-4-6}{2}$$

$$x = \frac{2}{2} \quad \text{or} \quad x = \frac{-10}{2}$$

$$x = 1 \quad \text{or} \quad x = -5$$

Answer: