

The Quadratic Equation Worksheet

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When a quadratic equation is in the form of $ax^2 + bx + c = 0$, then

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

Example: When $x^2 + 6x + 5 = 0$, then $a = 1$, $b = 6$ and $c = 5$, so

$$x = \frac{-6 \pm \sqrt{6^2 - (4)(1)(5)}}{(2)(1)} = \frac{-6 \pm \sqrt{36 - 20}}{2} = \frac{-6 \pm \sqrt{16}}{2} = \frac{-6 \pm 4}{2} =$$

$$\frac{-6 + 4}{2} = \frac{-2}{2} = -1 \text{ and } \frac{-6 - 4}{2} = \frac{-10}{2} = -5$$

Practice Exercises:

1) Solve using the quadratic equation: $x^2 + 3x + 2 = 0$

2) Solve using the quadratic equation: $2x^2 + 5x - 3 = 0$

3) Solve using the quadratic equation: $x^2 - 5x + 3 = 0$

4) Solve using the quadratic equation: $3x^2 + 2x - 5 = 0$

The Quadratic Equation Worksheet Answers

$$1) \quad \mathbf{a = 1, b = 3, c = 2} \quad x = \frac{-3 \pm \sqrt{3^2 - (4)(1)(2)}}{(2)(1)} = \frac{-3 \pm \sqrt{9-8}}{2} = \frac{-3 \pm \sqrt{1}}{2}$$

$$\frac{-3+1}{2} = \frac{-2}{2} = -1 \quad \text{and} \quad \frac{-3-1}{2} = \frac{-4}{2} = -2 \quad x = -1, -2$$

$$2) \quad \mathbf{a = 2, b = 5, c = -3}$$

$$x = \frac{-5 \pm \sqrt{5^2 - (4)(2)(-3)}}{(2)(2)} = \frac{-5 \pm \sqrt{25+24}}{4} = \frac{-5 \pm \sqrt{49}}{4}$$

$$\frac{-5+7}{4} = \frac{2}{4} = \frac{1}{2} \quad \text{and} \quad \frac{-5-7}{4} = \frac{-12}{4} = -3 \quad x = \frac{1}{2}, -3$$

$$3) \quad \mathbf{a = 1, b = -5, c = 3}$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - (4)(1)(3)}}{(2)(1)} = \frac{5 \pm \sqrt{25-12}}{2} = \frac{5 \pm \sqrt{13}}{2} \quad x = \frac{5 \pm \sqrt{13}}{2}$$

$$4) \quad \mathbf{a = 3, b = 2, c = -5}$$

$$x = \frac{-2 \pm \sqrt{2^2 - (4)(3)(-5)}}{(2)(3)} = \frac{-2 \pm \sqrt{4+60}}{6} = \frac{-2 \pm \sqrt{64}}{6}$$

$$\frac{-2+8}{6} = \frac{6}{6} = 1 \quad \text{and} \quad \frac{-2-8}{6} = \frac{-10}{6} = -\frac{5}{3} \quad x = 1, -\frac{5}{3}$$