

Solving Quadratic Equations

$$ax^2 + bx + c = 0$$

1. Factor $x^2 + 10x + 1 = 0$ Can't be factored
2. Complete the square >
3. Quadratic Formula

Quadratic Formula

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

$$ax^2 + bx + c = 0$$

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

$$a = 1$$

$$b = 5$$

$$c = 6$$

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

$$x = \frac{-5 \pm \sqrt{25 - 24}}{2}$$

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

$$x = \frac{-5 \pm 1}{2}$$

$$x = \frac{-5+1}{2}$$

$$x = \frac{-5-1}{2}$$

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

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

$$x = -2$$

$$x = -3$$

$$x^2 + 10x = 5$$

$$x^2 + 10x - 5 = 0$$

$$a=1$$

$$b=10$$

$$c=-5$$

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

$$x = \frac{-10 \pm \sqrt{(10)^2 - 4(1)(-5)}}{2(1)}$$

$$x = \frac{-10 \pm \sqrt{100 + 20}}{2}$$

$$x = \frac{-10 \pm \sqrt{120}}{2}$$

$$x = \frac{-10 \pm \sqrt{4 \cdot 30}}{2}$$

$$x = \frac{-10 \pm 2\sqrt{30}}{2}$$

$$x = -5 \pm \sqrt{30}$$

$$x = \frac{-10 + 2\sqrt{30}}{2}$$

$$x = \frac{-10 - 2\sqrt{30}}{2}$$

$$x = \frac{-10}{2} + \frac{2\sqrt{30}}{2}$$

$$x = \frac{-10}{2} - \frac{2\sqrt{30}}{2}$$

$$x = -5 + \sqrt{30}$$

$$x = -5 - \sqrt{30}$$

$$1 \cdot 120$$

$$5 \cdot 24$$

$$10 \cdot 12$$

$$30 \cdot 4$$

$$40 \cdot 3$$

$$2 \cdot 60$$

$$6 \cdot 20$$

$$\sqrt{4 \cdot 30}$$

$$\sqrt{4} \cdot \sqrt{30}$$

$$2 \sqrt{30}$$

$$x = \frac{-10 \pm 2\sqrt{30}}{5}$$

$$x = -\frac{10}{5} + \frac{2\sqrt{30}}{5} \quad x = -\frac{10}{5} - \frac{2\sqrt{30}}{5}$$

$$x = -2 + \frac{2\sqrt{30}}{5} \quad x = -2 - \frac{2\sqrt{30}}{5}$$

$$x = \frac{8 \pm 6\sqrt{2}}{4}$$

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

Reduce

$$-x^2 - 3x + 1 = 0$$

$$\begin{aligned} a &= -1 \\ b &= -3 \\ c &= 1 \end{aligned}$$

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

$$x = \frac{+3 \pm \sqrt{(-3)^2 - 4(-1)(1)}}{2(-1)}$$

$$x = \frac{3 \pm \sqrt{9 + 4}}{-2}$$

$$x = \frac{3 \pm \sqrt{13}}{-2}$$

$$\frac{-3}{2}$$

$$x = \frac{-3 \pm \sqrt{13}}{2}$$

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$$ax^2 + bx + c = 0$$

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