

The Quadratic Formula

9th Grade

The method that always works, and the sign errors that ruin it.

Any quadratic in the form $ax^2 + bx + c = 0$ can be solved by this formula, whether or not it factors.

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

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

$a=1, b=5, c=6.$

$$x = -2 \text{ or } -3$$

$$2x^2 - 4x - 3 = 0$$

Watch the negative c.

$$x = (4 \pm \sqrt{40})/4$$

b is negative

If $b = -4$, then $-b = +4$.

$-b$ becomes positive

Equation not equal to 0

The formula only works from $ax^2 + bx + c = 0$.

rearrange first

THE COMMON MISTAKE

× forgetting the $\pm$

✓ there are usually two solutions

A quadratic normally crosses the axis twice. One answer is half the work.

Try factoring first — it is faster when it works. The formula is the reliable fallback.