



Factorising Quadratics (QF)

Factorisation: Quadratic Formula

The quadratic formula is used to solve quadratic equations. It is often the most convenient method of solving quadratics.

Recall the general quadratic equation: $ax^2 + bx + c = 0$

Quadratic Equation

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

EXAMPLE: Solve the quadratic $x^2 + 3x - 4 = 0$

STEP ONE: Identify your terms $a = 1$ $b = 3$ $c = -4$

STEP TWO: Substitute into the quadratic formula

$$x = \frac{-3 \pm \sqrt{3^2 - 4(1)(-4)}}{2(1)} = \frac{-3 \pm \sqrt{9 + 16}}{2} = \frac{-3 \pm \sqrt{25}}{2} = \frac{-3 \pm 5}{2}$$

STEP THREE: Solve $x = \frac{-3+5}{2} = \frac{2}{2} = 1$ and $x = \frac{-3-5}{2} = \frac{-8}{2} = -4$

STEP FOUR: Factorise $\rightarrow (x - 1)(x + 4) = 0$ **INTERCEPT FORM**
 $\rightarrow x$ -intercepts at $(1, 0)$ and $(-4, 0)$

Instructions: Factorise the quadratics and find their intercept points.

1

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



2

$$x^2 + 12x + 36 = 0$$

3

$$x^2 + 8x + 15 = 0$$

4

$$x^2 - 10x + 25 = 0$$

5

$$x^2 + 6x + 8 = 0$$



6

$$x^2 - 4x - 12 = 0$$

7

$$x^2 + 7x + 6 = 0$$

8

$$x^2 - 8x + 7 = 0$$

9

$$x^2 + 9x - 10 = 0$$



10

$$3x^2 - 4x + 1 = 0$$

11

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

12

$$8x^2 + 6x + 1 = 0$$

13

$$6x^2 - 7x - 3 = 0$$



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1

$$x^2 - 2x - 8 = 0$$



2

$$x^2 + 14x + 49 = 0$$

3

$$x^2 + 3x - 10 = 0$$

4

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

5

$$x^2 - 169 = 0$$



6

$$x^2 + 5x - 24 = 0$$

7

$$x^2 + 9x + 20 = 0$$

8

$$x^2 - 21x + 108 = 0$$

9

$$x^2 + 7x - 44 = 0$$



10

$$2x^2 + 7x + 3 = 0$$

11

$$5x^2 + 12x + 4 = 0$$

12

$$3x^2 - 5x - 8 = 0$$

13

$$12x^2 + 17x + 6 = 0$$