

QUADRATIC EQUATIONS BY FORMULAEXERCISE

1. Solve $x^2 - 7x + 10 = 0$

Use quadratic formula and check answers by factorising

2. Solve $x^2 - 5x - 24 = 0$

Use quadratic formula and check answers by factorising.

Solve the following equations using the quadratic formula.
Where necessary, give answers to 3 sig. fig.

3. Solve $2x^2 + 5x - 7 = 0$

4. Solve $7x^2 - 3x - 1 = 0$

5. Solve $5x^2 + 10x + 3 = 0$

6. Solve $4x^2 - 9x + 3 = 0$

QUADRATIC EQUATIONS BY FORMULA

EXERCISE

1. $x^2 - 7x + 10 = 0$

$a = 1, b = -7, c = 10$

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

$$x = \frac{+7 \pm \sqrt{(-7)^2 - 4 \times 1 \times 10}}{2 \times 1}$$

$$x = \frac{+7 \pm \sqrt{49 - 40}}{2}$$

$$x = \frac{+7 \pm 3}{2}$$

$$x = \frac{+7+3}{2} \text{ or } x = \frac{+7-3}{2}$$

$$x = 5 \text{ or } x = 2$$

Check by factorising

$$x^2 - 7x + 10 = 0$$

$$(x - 5)(x - 2) = 0$$

Either $x - 5 = 0$

$$\Rightarrow x = 5$$

or $x - 2 = 0$

$$\Rightarrow x = 2$$

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

$a = 1, b = -5, c = -24$

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

$$x = \frac{+5 \pm \sqrt{(-5)^2 - 4 \times 1 \times (-24)}}{2 \times 1}$$

$$x = \frac{+5 \pm \sqrt{25 + 96}}{2}$$

$$x = \frac{+5 \pm \sqrt{121}}{2}$$

$$x = \frac{+5 \pm 11}{2}$$

$$x = \frac{+5+11}{2} \text{ or } x = \frac{+5-11}{2}$$

$$x = 8 \text{ or } x = -3$$

Check by factorising

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

$$(x - 8)(x + 3) = 0$$

Either $x - 8 = 0$

$$\Rightarrow x = 8$$

or $x + 3 = 0$

$$\Rightarrow x = -3$$

3. $2x^2 + 5x - 7 = 0$

$a = 2, b = 5, c = -7$

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

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \times 2 \times (-7)}}{2 \times 2}$$

$$x = \frac{-5 \pm \sqrt{25 + 56}}{4}$$

$$x = \frac{-5 \pm \sqrt{81}}{4}$$

$$x = \frac{-5 \pm 9}{4}$$

$$x = \frac{-5 + 9}{4} \quad \text{or} \quad x = \frac{-5 - 9}{4}$$

$$x = 1 \quad \text{or} \quad x = -3.5$$

4. $7x^2 - 3x - 1 = 0$

$a = 7, b = -3, c = -1$

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

$$x = \frac{+3 \pm \sqrt{(-3)^2 - 4 \times 7 \times (-1)}}{2 \times 7}$$

$$x = \frac{+3 \pm \sqrt{9 + 28}}{14}$$

$$x = \frac{+3 \pm \sqrt{37}}{14}$$

$$x = \frac{+3 + \sqrt{37}}{14} \quad \text{or} \quad x = \frac{+3 - \sqrt{37}}{14}$$

$$x = 0.649 \quad \text{or} \quad x = -0.220$$

QUADRATIC EQUATIONS BY FORMULAEXERCISE

5. $5x^2 + 10x + 3 = 0$

$a = 5, b = 10, c = 3$

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

$$x = \frac{-10 \pm \sqrt{10^2 - 4 \times 5 \times 3}}{2 \times 5}$$

$$x = \frac{-10 \pm \sqrt{100 - 60}}{10}$$

$$x = \frac{-10 \pm \sqrt{40}}{10}$$

$$x = \frac{-10 + \sqrt{40}}{10} \text{ or } x = \frac{-10 - \sqrt{40}}{10}$$

$x = -0.368 \text{ or } x = -1.63$

6. $4x^2 - 9x + 3 = 0$

$a = 4, b = -9, c = 3$

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

$$x = \frac{+9 \pm \sqrt{(-9)^2 - 4 \times 4 \times 3}}{2 \times 4}$$

$$x = \frac{+9 \pm \sqrt{81 - 48}}{8}$$

$$x = \frac{+9 \pm \sqrt{33}}{8}$$

$$x = \frac{+9 + \sqrt{33}}{8} \text{ or } x = \frac{+9 - \sqrt{33}}{8}$$

$x = 1.84 \text{ or } x = 0.407$

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