GCSE HIGHER · REVISION MAT 1

Solving quadratic equations

1 Solve

$$x^2 - 36 = 0$$

2 Solve by factorising

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

3 Show that $x = 4$ is a solution of

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

Find the other solution.

4 A rectangle measures x cm by $(x + 3)$ cm.

Its area is 40 cm^2.

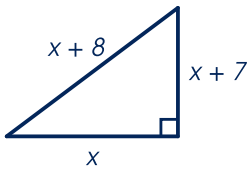
Find the value of x.

5 Explain why

$$x^2 + 4x + 7 = 0$$

has no real solutions.

6 The sides of this right-angled triangle are in cm.



Find the perimeter of the triangle.

7 Show that $3x^2 - 4x - 2 = 0$ has a solution between 1 and 2.

Find this solution to 2 decimal places.

8 Solve

$$\frac{3}{x} + \frac{2}{x+1} = 2$$

Give your answers to 2 decimal places.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 1

Solving quadratic equations

1 $x^2 = 36$

$x = 6$ or $x = -6$

2 $(x + 5)(x - 3) = 0$

$x = -5$ or $x = 3$

3 $16 - 4 - 12 = 0$ ✓

$(x - 4)(x + 3) = 0$

Other solution $x = -3$

4 $x(x + 3) = 40$

$x^2 + 3x - 40 = 0$

$(x + 8)(x - 5) = 0$

$x = 5$

5 $x^2 + 4x + 7 = (x + 2)^2 + 3$

$(x + 2)^2 \geq 0$, so the expression is always at least 3.

It can never equal 0.

6 $x^2 + (x + 7)^2 = (x + 8)^2$

$x^2 - 2x - 15 = 0$

$(x - 5)(x + 3) = 0 \Rightarrow x = 5$

Sides 5, 12, 13

Perimeter = 30 cm

7 $x = 1$: -3, $x = 2$: 2

Sign change, so a root lies between.

$$x = \frac{4 + \sqrt{40}}{6}$$

$x = 1.72$

8 $3(x + 1) + 2x = 2x(x + 1)$

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

$$x = \frac{3 \pm \sqrt{33}}{4}$$

$x = 2.19$ or $x = -0.69$

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