GCSE HIGHER · REVISION MAT 3

Solving quadratic equations

1 Solve

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

2 Solve

$$x^2 - x - 20 = 0$$

3 Sam says $x^2 - 16 = 0$ has only one solution, $x = 4$.

Is Sam correct? Explain.

4 A triangle has base $2x$ cm and height $(x + 3)$ cm.

Its area is 28 cm^2.

Find the base and height.

5 Solve by completing the square

$$x^2 - 8x + 13 = 0$$

Give your answers in the form $a \pm \sqrt{b}$.

6 A rectangular pen is built against a wall.

30 m of fencing is used for the other three sides.

The area is 100 m^2.

Find the possible dimensions.

7 Show that the solutions of

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

are $x = -2 \pm \sqrt{5}$.

8 Solve

$$x^4 - 13x^2 + 36 = 0$$

Mr&Mrs MATHS

ANSWERS · REVISION MAT 3

Solving quadratic equations

1 $x = 3$ or $x = -8$

2 $(x - 5)(x + 4) = 0$

$x = 5$ or $x = -4$

3 $x^2 = 16$

No: $x = 4$ or $x = -4$

4 $\frac{1}{2} \times 2x(x + 3) = 28$

$x^2 + 3x - 28 = 0$

$(x + 7)(x - 4) = 0 \Rightarrow x = 4$

Base 8 cm, height 7 cm

5 $(x - 4)^2 - 3 = 0$

$(x - 4)^2 = 3$

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

6 Width x, length $30 - 2x$

$x(30 - 2x) = 100$

$x^2 - 15x + 50 = 0 \Rightarrow x = 5$ or 10

5 m by 20 m, or 10 m by 10 m

7 $(x + 2)^2 - 4 - 1 = 0$

$(x + 2)^2 = 5$

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

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

8 Let $y = x^2$: $y^2 - 13y + 36 = 0$

$(y - 4)(y - 9) = 0$

$x^2 = 4$ or $x^2 = 9$

$x = \pm 2$ or $x = \pm 3$

Mr&Mrs MATHS