GCSE HIGHER · REVISION MAT 1

Simultaneous equations

1 Solve

$$x + y = 10$$
$$x - y = 4$$

2 Solve

$$3x + 2y = 16$$
$$x + 2y = 8$$

3 Show that $x = 2$, $y = -1$ satisfies both

$$3x + 4y = 2$$
$$5x - y = 11$$

4 3 coffees and 2 teas cost £11.10.

2 coffees and 3 teas cost £10.40.

Find the cost of one coffee.

5 Show that the lines

$$4x + 3y = 5$$
$$6x - 5y = 17$$

meet at the point $(2, -1)$.

6 The line $y = mx + c$ passes through $(2, 7)$ and $(5, 13)$.

Find m and c.

7 Solve

$$y = x + 1$$
$$x^2 + y^2 = 25$$

8 The line $y = 2x - 1$ meets the curve $y = x^2 - 2x + 2$ at A and B.

Find the length AB, as a surd.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 1

Simultaneous equations

1 $2x = 14$

$x = 7$, $y = 3$

2 $2x = 8 \Rightarrow x = 4$

$x = 4$, $y = 2$

3 $6 - 4 = 2$ ✓

$10 + 1 = 11$ ✓

Both equations are true.

4 $3c + 2t = 11.10$, $2c + 3t = 10.40$

Add: $c + t = 4.30$

Subtract: $c - t = 0.70$

Coffee £2.50 (tea £1.80)

5 $12x + 9y = 15$

$12x - 10y = 34$

$19y = -19 \Rightarrow y = -1$

$x = 2$, so they meet at (2, –1)

6 $7 = 2m + c$

$13 = 5m + c$

$3m = 6$

$m = 2$, $c = 3$

7 $x^2 + (x + 1)^2 = 25$

$x^2 + x - 12 = 0 \Rightarrow x = 3$ or -4

(3, 4) and (–4, –3)

8 $x^2 - 4x + 3 = 0 \Rightarrow x = 1$ or 3

A(1, 1), B(3, 5)

AB = $\sqrt{2^2 + 4^2}$

AB = $\sqrt{20} = 2\sqrt{5}$

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