

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- $3x = 18$
- $x = 6$

2.2

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

2.3

- $4x - 4 = 2x + 6$ so $2x = 10$
- $x = 5$

2.4

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

2.5

- $a = 3, b = -5, c = -2$

3.1

- add the two equations: $4x = 16$ so $x = 4$
- $4 - 2y = 4$ so $y = 0$

3.2

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

3.3

- $a = 2, b = 3, c = -4$

$$x = \frac{-3 \pm \sqrt{9+32}}{4} = \frac{-3 \pm \sqrt{41}}{4}$$

- $x = 0.85$ or $x = -2.35$

3.4

(a)

- substitute $y = x + 3$: $x^2 + (x+3)^2 = 29$
- $2x^2 + 6x - 20 = 0$ so $x^2 + 3x - 10 = 0$
- $(x+5)(x-2) = 0$
- $x = -5$ or $x = 2$

- matching $y = -2$ and $y = 5$

(b)

- $(3x-1)(x-2) = 0$
- $x = \frac{1}{3}$ or $x = 2$

(c)

- $a = 1, b = 6, c = 4$

$$x = \frac{-6 \pm \sqrt{36-16}}{2}$$

- $\sqrt{20} = 4.472$
- $x = -0.76$ or $x = -5.24$