

8.2 Answers

GCSE Mathematics Simultaneous Equations III

8.2.1 Solutions (8.1 Test)

Answer 1

- (i) $x = -8$
- (ii) $x = 2.5$
- (iii) $x = 14$
- (iv) $x = 4$
- (v) $x = -5, 5$
- (vi) $x = 9$

Answer 2

- (a) $w(w - 9)$
- (b) $x = -2$
- (c) $y^2 - 4y - 21$

Answer 3

- (a) (i) a^4
- (ii) $30ab$
- (iii) q^{10}
- (b) $y = -3.5$
- (c) $v = 24$

Answer 4

- (a) $x = \frac{4}{3}$
- (b) (i) $x \leq 4$
- (ii) $1, 2, 3, 4$

Answer 5

- (a) $4v + 12$
- (b) w^8
- (c) $x = -4$
- (d) $y < 2.75$

Answer 6

- (a) $5(2y - 3)$
- (b) $3pq(3p + 4q)$
- (c) (i) $(x + 8)(x - 2)$
- (ii) $x = -8, 2$

Answer 7

- (i) $x \geq -3.5$
- (ii) $-3, -2, -1$

Answer 8

$$x^2 + 2x - 35$$

Answer 9

$$6x^2 + 13x + 5$$

Answer 10

- (a) $(x - 4)(x + 3)$
- (b) $(3x + 1)(x + 2)$

Answer 11

$$x^2 - 5x - 36 = 0$$

gives $(9, 81)$ or $(-4, 16)$

Answer 12

$$2(x - 3)$$

Answer 13

$$\frac{x}{2}$$

Answer 14

- (i) $y = 5x^2 + 12x + 4$
- $y = (5x + 2)(x + 2)$

- (ii) $y = 21x^2 - 10x + 1$
- $y = (3x - 1)(7x - 1)$

Answer 15

(i) $6x^2 + 11x - 10 = 0$

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

Either $x = -\frac{5}{2}$ or $x = \frac{2}{3}$

(ii) $12x^2 - 16x - 3 = 0$

$(2x - 3)(6x + 1) = 0$

Either $x = \frac{3}{2}$ or $x = -\frac{1}{6}$

Answer 16

$3x^2 + xy = 5 \Leftrightarrow 6x^2 + 2xy = 10$

$6x^2 + x(x + 9) = 10$

$6x^2 + x^2 + 9x = 10$

$7x^2 + 9x - 10 = 0$

$(x + 2)(7x - 5) = 0$

Either $x = -2$ or $x = \frac{5}{7}$

Points are $\left(-2, \frac{7}{2}\right), \left(\frac{5}{7}, \frac{34}{7}\right)$

Answer 17

$x - 6y = 5 \Leftrightarrow x = 6y + 5$

$(6y + 5)y - 2y^2 = 6$

$6y^2 + 5y - 2y^2 = 6$

$4y^2 + 5y - 6 = 0$

$(y + 2)(4y - 3) = 0$

Either $y = -2$ or $y = \frac{3}{4}$

Points are $(-7, -2), \left(\frac{19}{2}, \frac{3}{4}\right)$

Answer 18

$5x^2 - 12x + 7 = 0$

gives $(1.4, -0.2)$ or $(1, -1)$