

Answers Sheet

FACTORISING HARDER QUADRATICS

1-

$$\begin{aligned} \textcircled{1} \quad & 2x^2 + 7x + 3 = 0 \\ & 2x^2 + 6x + x + 3 \\ & 2x(x+3) + 1(x+3) \\ & (2x+1)(x+3) \end{aligned}$$

2-

$$\begin{aligned} \textcircled{2} \quad & 3x^2 - 10x + 3 = 0 \\ & 3x^2 - 9x - x + 3 \\ & 3x(x-3) - 1(x-3) \\ & (3x-1)(x-3) \end{aligned}$$

3-

$$\begin{aligned} \textcircled{3} \quad & 4x^2 + 11x + 6 = 0 \\ & 4x^2 + 8x + 3x + 6 \\ & 4x(x+2) + 3(x+2) \\ & (4x+3)(x+2) \end{aligned} \quad x = -\frac{3}{4}, \quad x = -2$$

4-

$$\begin{aligned} \textcircled{4} \quad & 5x^2 + 16x + 3 = 0 \\ & 5x^2 + 15x + x + 3 \\ & 5x(x+3) + 1(x+3) \\ & (5x+1)(x+3) \end{aligned}$$

5-

$$\begin{aligned} \textcircled{5} \quad & 6x^2 + 17x + 5 = 0 \\ & 6x^2 + 15x + 2x + 5 \\ & 3x(2x+5) + 1(2x+5) \\ & (3x+1)(2x+5) \end{aligned}$$

6-

$$\begin{aligned} \textcircled{6} \quad & x^2 - 7x + 12 = 0 \\ & x^2 - 4x - 3x + 12 \\ & x(x-4) - 3(x-4) \\ & (x-3)(x-4) \end{aligned} \quad x=3, x=4$$

7-

$$\begin{aligned} \textcircled{7} \quad & x^2 - 10x + 24 = 0 \\ & x^2 - 6x - 4x + 24 \\ & x(x-6) - 4(x-6) \\ & (x-6)(x-4) \end{aligned}$$

8-

$$\begin{aligned} \textcircled{8} \quad & x^2 + 3x - 18 = 0 \\ & x^2 + 6x - 3x - 18 \\ & x(x+6) - 3(x+6) \\ & (x+6)(x-3) \end{aligned}$$

9-

$$\begin{aligned} \textcircled{9} \quad & 5x^2 + 19x + 12 = 0 \\ & 5x^2 + 15x + 4x + 12 \\ & 5x(x+3) + 4(x+3) \\ & (5x+4)(x+3) \end{aligned}$$

$$x = -3, \quad x = -\frac{4}{5}$$

10-

$$\begin{aligned} (10) \quad & 6x^2 + 13x + 6 = 0 \\ & 6x^2 + 9x + 4x + 6 \\ & 3x(2x+3) + 2(2x+3) \\ & (3x+2)(2x+3) \end{aligned}$$

11-

$$\begin{aligned} (11) \quad & 12x^2 + 7x - 12 = 0 \\ & 12x^2 + 16x - 9x - 12 \\ & 4x(3x+4) - 3(3x+4) \\ & (4x-3)(3x+4) \end{aligned}$$

12-

$$\begin{aligned} (12) \quad & 15x^2 - 11x - 12 = 0 \\ & 15x^2 - 20x + 9x - 12 \\ & 5x(3x-4) + 3(3x-4) \\ & (5x+3)(3x-4) \quad x = -\frac{3}{5}, \quad x = \frac{4}{3} \end{aligned}$$

13-

(13)

$$10x^2 + 19x - 15 = 0$$

$$10x^2 + 25x - 6x - 15$$

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

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

14-

(14)

$$8x^2 - 22x + 15 = 0$$

$$8x^2 - 10x - 12x + 15$$

$$2x(4x-5) - 3(4x-5)$$

$$(2x-3)(4x-5)$$

15-

(15)

$$12x^2 - 17x + 6 = 0$$

$$12x^2 - 9x - 8x + 6$$

$$3x(4x-3) - 2(4x-3)$$

$$(3x-2)(4x-3)$$

$$x = \frac{2}{3}, \quad x = \frac{3}{4}$$

16-

$$\begin{aligned} (16) \quad & 2x^2 - 72 = 0 \\ & 2(x^2 - 36) \\ & 2(x+6)(x-6) \end{aligned}$$

17-

$$\begin{aligned} (17) \quad & 3x^2 - 27 = 0 \\ & 3(x^2 - 9) \\ & 3(x+3)(x-3) \end{aligned}$$

18-

$$\begin{aligned} (18) \quad & 5x^2 - 125 = 0 \\ & 5(x^2 - 25) \\ & 5(x+5)(x-5) \\ & x = -5, \quad x = 5 \end{aligned}$$

19-

(19)

$$a^2 + 2ab + b^2$$

$$(a + b)(a + b)$$

20-

(20)

$$6x^2 + 11xy - 10y^2$$

$$6x^2 + 15xy - 4xy - 10y^2$$

$$3x(2x + 5y) - 2y(2x + 5y)$$

$$(3x - 2y)(2x + 5y)$$

21-

(21)

$$12x^2 + 17xy - 5y^2$$

$$12x^2 + 20xy - 3xy - 5y^2$$

$$4x(3x + 5y) - y(3x + 5y)$$

$$(4x - y)(3x + 5y)$$