

Factoring Trinomials Notes Decomposition

Date _____

Factor each completely.

$$1) \overbrace{k^2 - 13k + 36} \quad \begin{array}{l} \times 36 \\ + 13 \end{array}$$

$$(k-9)(k-4)$$

$$-9x - 4x = -13x \quad \text{middle term}$$

$$\overbrace{k^2 - 9k} \quad \overbrace{-4k + 36}$$

$$k(k-9) - 4(k-9)$$

$$(k-4)(k-9)$$

$$2) \overbrace{x^2 + 5x + 4} \quad \begin{array}{l} \times 4 \\ + 5 \end{array}$$

$$(x+1)(x+4)$$

$$+4x + 1x = +5x \quad \text{middle term}$$

$$\overbrace{x^2 + 4x} \quad \overbrace{+ 1x + 4}$$

$$x(x+4) + 1(x+4)$$

$$(x+1)(x+4)$$

$$3) \overbrace{x^2 + 9x - 10} \quad \begin{array}{l} \times 10 \\ - 9 \end{array}$$

$$(x+10)(x-1)$$

$$\overbrace{x^2 + 10x} + \overbrace{-1x - 10} = +9x \quad - \text{middle term}$$

$$x(x+10) - 1(x+10)$$

$$(x+10)(x-1)$$

$$4) \overbrace{x^2 - 5x - 50} \quad \begin{array}{l} \times 50 \\ - 5 \end{array}$$

$$(x-10)(x+5)$$

$$-10x + 5x = -5x \quad - \text{middle term}$$

$$\overbrace{x^2 - 10x} + \overbrace{5x - 50}$$

$$x(x-10) + 5(x-10)$$

$$(x+5)(x-10)$$

$$5) \overbrace{2a^2 + 5a - 12} \quad \begin{array}{l} \times 24 \\ - 5 \end{array}$$

$$(2a-3)(a+4)$$

$$+8a - 3a = 5a \quad - \text{middle term}$$

$$\overbrace{2a^2 + 8a} - \overbrace{3a - 12}$$

$$2a(a+4) - 3(a+4)$$

$$(2a-3)(a+4)$$

$$6) 3x^2 + 10x + 8$$

$$(3x+4)(x+2)$$

$$\times 24$$

$$+ 10$$

$$+ 6x + 4x = 10x \text{ middle term}$$

$$\sqrt{3x^2 + 6x} + \sqrt{4x + 8}$$

$$3x(x+2) + 4(x+2)$$

$$(3x+4)(x+2)$$

$$7) 2n^2 + 13n + 20$$

$$(2n+5)(n+4)$$

$$\times 40$$

$$+ 13$$

$$+ 8n + 5n = +13n$$

$$\sqrt{2n^2 + 8n} + \sqrt{5n + 20}$$

$$2n(n+4) + 5(n+4)$$

$$(2n+5)(n+4)$$

$$8) 2x^2 + 9x + 4$$

$$(2x+1)(x+4)$$

$$\times 8$$

$$+ 9$$

$$+ 8x + 1x = 9x$$

$$\sqrt{2x^2 + 8x} + \sqrt{1x + 4}$$

$$2x(x+4) + 1(x+4)$$

$$(2x+1)(x+4)$$

$$9) \overline{3x^2 + 8x + 4}$$

$$(3x+2)(x+2)$$

$$\times 12$$

$$+ 8$$

$$+6x + 2x = +8x \quad \text{— middle term}$$

$$\overline{3x^2} + \overline{6x} + \overline{2x} + 4$$

$$3x(x+2) + 2(x+2)$$

$$(3x+2)(x+2)$$

$$10) \overline{2x^2 + 3x - 9}$$

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

$$\times 18$$

$$- 3$$

$$+6x - 3x = +3x$$

$$\overline{2x^2} + \overline{6x} - \overline{3x} - 9$$

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

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