

Mathematics 10D

4.3 – Factoring x^2+bx+c

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Expand:

$$(x+4)(x+5)$$

Foil

$$= x^2 + \underline{5x + 4x} + 20$$

$$= x^2 + 9x + 20$$

Factor

$$\underline{1}x^2 + 9x + \underline{20}$$

$$= x^2 + 5x + 4x + 20$$

$$(x+4)(x+5)$$

$$\textcircled{x} + 20$$

$$\textcircled{1} + 9$$

$$1, 20$$

$$2, 10$$

$$\textcircled{4, 5}$$

$$① x^2 - 14x + 45$$

$$\begin{array}{l} \textcircled{x} 45 \\ \textcircled{+} -14 \end{array}$$

$$= (x-5)(x-9)$$

$$\begin{array}{l} 1, 45 \\ 3, 15 \end{array}$$

$$\textcircled{5, 9}$$

$$② x^2 - x - 12$$

$$\begin{array}{l} \textcircled{x} -12 \\ \textcircled{+} -1 \end{array}$$

$$= (x+3)(x-4)$$

$$1, -12$$

$$2, -6$$

$$\textcircled{3, -4}$$

$$③ x^2 + 7x + 10$$

$$\begin{array}{l} \textcircled{x} 10 \\ \textcircled{+} 7 \end{array}$$

$$= (x+2)(x+5)$$

$$\textcircled{2, 5}$$

$$④ x^2 - 5x + 4$$

$$\begin{array}{l} \textcircled{x} 4 \\ \textcircled{+} -5 \end{array}$$

$$= (x-1)(x-5)$$

$$\textcircled{-1, -4}$$

$$2, 2$$

$$(5) \quad 3x^2 - 9x - 210$$

$$= 3(x^2 - 3x - 70) \quad \begin{matrix} \textcircled{x} -70 \\ \textcircled{+} -3 \end{matrix}$$

$$= 3(x - 10)(x + 7)$$

$$1, -70$$

$$2, -35$$

$$5, -14$$

$$\textcircled{7, -10}$$

$$(6) \quad 5x^2 + 10x - 175$$

$$= 5(x^2 + 2x - 35)$$

$$\textcircled{x} -35$$

$$\textcircled{+} +2$$

$$-1, 35$$

$$\textcircled{-5, 7}$$

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

$$(1) \quad x^2 - 21x + 108$$

$$(x - 9)(x - 12)$$

$$(x) \quad 108$$

$$\oplus \quad -21$$

$$-1, -108$$

$$-2, -54$$

$$-3, -36$$

$$-4, -27$$

$$-6, -18$$

$$\boxed{-9, -12}$$

$$= -21$$