

# FACTORIZING TRINOMIALS

$$\underline{ax^2 + bx + c} \quad a \neq 1$$

Ex 1

$$-x^2 + 6x + 16$$
$$= -(x^2 - 6x - 16)$$

$\begin{array}{l} \searrow \rightarrow P = -16 \\ \rightarrow S = -6 \end{array} \parallel -8, 2$

$$= -(x-8)(x+2)$$

$$= (8-x)(x+2)$$

(MAY CHECK)

Ex 2

$$-x^2 - 7x - 12$$
$$= -(x^2 + 7x + 12)$$

$\begin{array}{l} \searrow \rightarrow P = 12 \\ \rightarrow S = 7 \end{array} \parallel 3, 4$

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

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

OR

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

Ex 3  $2x^2 - x - 6$

$\begin{array}{l} \text{---} \rightarrow 2 \cdot (-6) = -12 = P \\ \text{---} \rightarrow -1 = S \end{array} \parallel -4, 3$

$$= \underline{2x^2 - 4x} + \underline{3x - 6}$$

$$= 2x(\underline{x-2}) + 3(\underline{x-2})$$

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

ORDER DOES NOT MATTER:

$$\underline{2x^2 + 3x} - \underline{4x - 6}$$

$$= x(\underline{2x+3}) - 2(\underline{2x+3})$$

$$= (2x+3) \cdot (x-2)$$

Ex 4  $3x^2 - x - 10$

$\begin{array}{l} -30 = P \\ -1 = S \end{array} \parallel -6, 5$

$$\underline{3x^2 - 6x} + \underline{5x - 10}$$

$$= 3x(\underline{x-2}) + 5(\underline{x-2})$$

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

Ex 5

$$8x^2 - 22x + 5$$

$$\begin{array}{l} \underbrace{\hspace{10em}} \\ 40 = P \\ -22 = S \end{array} \quad \parallel \quad -20, -2$$

$$= \underbrace{8x^2 - 20x} - \underbrace{2x + 5}$$

$$= 4x(\underline{2x-5}) - 1(\underline{2x-5})$$

$$= (2x-5)(4x-1)$$

Ex 6

$$8x^2 - 10x + 3$$

$$\begin{array}{l} \underbrace{\hspace{10em}} \\ 24 = P \\ -10 = S \end{array} \quad \parallel \quad -6, -4$$

~~-12, 2~~

$$= \underbrace{8x^2 - 6x} - \underbrace{4x + 3}$$

$$= 2x(\underline{4x-3}) - 1(\underline{4x-3})$$

$$= (4x-3)(2x-1)$$

Ex 7

$$5x^4 + 13x^3 + 6x^2$$

$$= x^2 (5x^2 + 13x + 6)$$

$$\begin{array}{l} 30 = P \\ 13 = S \parallel 10, 3 \end{array}$$

$$\underline{5x^2 + 10x} + \underline{3x + 6}$$

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

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

$$= x^2 (x+2)(5x+3)$$