

Quiz Factoring

1. Expand and simplify :

$$\begin{aligned} \text{a. } (x+3)(x+5) &= x^2 + 5x + 3x + 15 & [1] \\ &= x^2 + 8x + 15 \end{aligned}$$

$$\begin{aligned} \text{b. } (3x-1)(5x-3) &= 15x^2 - 9x - 5x + 3 & [2] \\ &= 15x^2 - 14x + 3 \end{aligned}$$

$$\begin{aligned} \text{c. } 3(x-5)(x+1) + (3x-1)^2 &= 3(x^2 + x - 5x - 5) + 9x^2 - 3x - 3x + 1 & [3] \\ &= 3x^2 - 12x - 15 + 9x^2 - 6x + 1 \\ &= 12x^2 - 18x - 14 \end{aligned}$$

$$\begin{aligned} \text{d. } (2x-5)(x-3) - (x+2)(2x-1) & & [3] \\ &= 2x^2 - 6x - 5x + 15 - (2x^2 - x + 4x - 2) \\ &= 2x^2 - 11x + 15 - 2x^2 - 3x + 2 \\ &= -14x + 17 \end{aligned}$$

2. Factor each expression [11]

$$\text{a. } x^2 + 11x + 30 = (x+5)(x+6)$$

$$b. x^2 + x - 30 = (x+6)(x-5)$$

$$c. 7x^2 - 7x - 7 = 7(x^2 - x - 1)$$

$$d. 3x^2 + x - 10 = 3x^2 + 6x - 5x - 10$$
$$\begin{array}{l} \otimes -30 \\ \oplus 1 \end{array} \quad = 3x(x+2) - 5(x+2)$$
$$= (3x-5)(x+2)$$

$$e. -2y^2 + 22y - 48 = -2(y^2 - 11y + 24)$$
$$= -2(y-8)(y-3)$$

$$f. 8y^2 - 2y - 1 = 8y^2 - 4y + 2y - 1$$
$$\begin{array}{l} \otimes -8 \\ \oplus -2 \end{array} \quad = 4y(2y-1) + 1(2y-1)$$
$$= (4y+1)(2y-1)$$