

KEY

8-8 Factoring by Grouping

Factor completely:

$$\begin{aligned} 1. \quad & 10x^3 - 25x^2 + 4x - 10 \\ & = 5x^2(2x - 5) + 2(2x - 5) \\ & = \boxed{(2x - 5)(5x^2 + 2)} \end{aligned}$$

(2)

$$\begin{aligned} 2. \quad & 2x^3 + x^2 - 6x - 3 \\ & = x^2(2x + 1) - 3(2x + 1) \\ & = \boxed{(2x + 1)(x^2 - 3)} \end{aligned}$$

(2)

$$\begin{aligned} 3. \quad & 30x^3 - 12x^2 + 120x - 48 \\ & = 6(5x^3 - 2x^2 + 20x - 8) \\ & = 6[x^2(5x - 2) + 4(5x - 2)] \\ & = \boxed{6(5x - 2)(x^2 + 4)} \end{aligned}$$

(3)

$$\begin{aligned} 4. \quad & 10x^4 + 30x^3 + 5x^2 + 15x \\ & = 5x[2x^3 + 6x^2 + x + 3] \\ & = 5x[2x^2(x + 3) + 1(x + 3)] \\ & = \boxed{5x(x + 3)(2x^2 + 1)} \end{aligned}$$

(3)