

3.4

$$1) \begin{array}{rrrr} 1 & 1 & -10 & 8 \\ & 1 & 2 & -8 \\ \hline 1 & 2 & -8 & \parallel & 0 \end{array}$$

$$x^3 + x^2 - 10x + 8 = (x - 1)(x^2 + 2x - 8)$$

$$\begin{array}{rrr} 1 & 2 & -8 \\ & 2 & 8 \\ \hline 1 & 4 & \parallel & 0 \end{array}$$

$$x^2 + 2x - 8 = (x - 2)(x + 4)$$

$$x^3 + x^2 - 10x + 8 = (x - 1)(x^2 + 2x - 8) = (x - 1)(x - 2)(x + 4)$$

$$2) \begin{array}{rrrrr} 1 & -3 & -7 & 27 & -18 \\ & 1 & -2 & -9 & 18 \\ \hline 1 & -2 & -9 & 18 & \parallel & 0 \end{array}$$

$$x^4 - 3x^3 - 7x^2 + 27x - 18 = (x - 1)(x^3 - 2x^2 - 9x + 18)$$

$$\begin{array}{rrrr} 1 & -2 & -9 & 18 \\ & 2 & 0 & -18 \\ \hline 1 & 0 & -9 & \parallel & 0 \end{array}$$

$$x^3 - 2x^2 - 9x + 18 = (x - 2)(x^2 - 9)$$

$$\begin{aligned} x^4 - 3x^3 - 7x^2 + 27x - 18 &= (x - 1)(x^3 - 2x^2 - 9x + 18) \\ &= (x - 1)(x - 2)(x^2 - 9) \\ &= (x - 1)(x - 2)(x - 3)(x + 3) \end{aligned}$$