

$$\begin{aligned} \text{Q1)} \quad & x^2 + 8x + 15 \\ & \swarrow \searrow \\ & x^2 + \underline{3x} + 5x + 15 \\ & x(x+3) + 5(x+3) \\ & \boxed{(x+3)(x+5)} \end{aligned}$$

$$\begin{aligned} \text{Q2)} \quad & 2x^2 + 5x + 3 \\ & \swarrow \searrow \\ & 2x^2 + \underline{2x} + 3x + 3 \\ & 2x(x+1) + 3(x+1) \\ & \boxed{(x+1)(2x+3)} \end{aligned}$$

$$\begin{aligned} \text{Q3)} \quad & x^2 - 3x - 10 \\ & \swarrow \searrow \\ & x^2 - \underline{5x} + 2x - 10 \\ & x(x-5) + 2(x-5) \\ & \boxed{(x-5)(x+2)} \end{aligned}$$

$$\begin{aligned} \text{Q4)} \quad & x^2 - 5x + 6 \\ & \swarrow \searrow \\ & x^2 - \underline{2x} - 3x + 6 \\ & x(x-2) - 3(x-2) \\ & \boxed{(x-2)(x-3)} \end{aligned}$$

$$\begin{aligned} \text{Q5)} \quad & 3x^2 - 7x + 2 \\ & \swarrow \searrow \\ & 3x^2 - \underline{1x} - 6x + 2 \\ & x(3x-1) - 2(3x-1) \\ & \boxed{(3x-1)(x-2)} \end{aligned}$$

$$\begin{aligned} \text{Q6)} \quad & 4x^2 + 8x - 5 \\ & \swarrow \searrow \\ & 4x^2 - \underline{2x} + 10x - 5 \\ & 2x(2x-1) + 5(2x-1) \\ & \boxed{(2x-1)(2x+5)} \end{aligned}$$

$$\begin{aligned} \text{Q7)} \quad & x^2 + 9x + 14 \\ & \swarrow \searrow \\ & x^2 + \underline{2x} + 7x + 14 \\ & x(x+2) + 7(x+2) \\ & \boxed{(x+2)(x+7)} \end{aligned}$$

$$\begin{aligned} \text{Q8)} \quad & 5x^2 - 29x - 6 \\ & \swarrow \searrow \\ & 5x^2 + \underline{1x} - 30x - 6 \\ & x(5x+1) - 6(5x+1) \\ & \boxed{(5x+1)(x-6)} \end{aligned}$$

$$\begin{aligned} \text{Q9)} \quad & x^2 - 64 \\ & x^2 + 0x - 64 \\ & \swarrow \searrow \\ & x^2 + \underline{8x} - 8x - 64 \\ & x(x+8) - 8(x+8) \\ & \boxed{(x+8)(x-8)} \end{aligned}$$

$$\begin{aligned} \text{Q10)} \quad & 4x^2 + 12x + 9 \\ & \swarrow \searrow \\ & 4x^2 + \underline{6x} + 6x + 9 \\ & 2x(2x+3) + 3(2x+3) \\ & \boxed{(2x+3)(2x+3)} \\ & \text{or} \\ & (2x+3)^2 \end{aligned}$$

$$\begin{aligned} \text{Q11)} \quad & 2x^2 + 13x + 20 \\ & \swarrow \searrow \\ & 2x^2 + \underline{5x} + 8x + 20 \\ & x(2x+5) + 4(2x+5) \\ & \boxed{(2x+5)(x+4)} \end{aligned}$$

$$\begin{aligned} \text{Q12)} \quad & x^2 + 2x + 1 \\ & \swarrow \searrow \\ & x^2 + \underline{1x} + 1x + 1 \\ & x(x+1) + 1(x+1) \\ & \boxed{(x+1)(x+1)} \\ & \text{or} \\ & (x+1)^2 \end{aligned}$$

$$\begin{aligned} \text{Q13)} \quad & 4x^2 - x - 5 \\ & 4x^2 - \underline{1x} - 5 \\ & \swarrow \searrow \\ & 4x^2 + \underline{4x} - 5x - 5 \\ & 4x(x+1) - 5(x+1) \\ & \boxed{(x+1)(4x-5)} \end{aligned}$$

$$\begin{aligned} \text{Q14)} \quad & x^2 - 5x + 4 \\ & \swarrow \searrow \\ & x^2 - \underline{1x} - 4x + 4 \\ & x(x-1) - 4(x-1) \\ & \boxed{(x-1)(x-4)} \end{aligned}$$

$$\begin{aligned} \text{Q15)} \quad & 9x^2 - 49 \\ & 9x^2 + 0x - 49 \\ & \swarrow \searrow \\ & 9x^2 + \underline{21x} - 21x - 49 \\ & 3x(3x+7) - 7(3x+7) \\ & \boxed{(3x+7)(3x-7)} \end{aligned}$$

$$\begin{aligned} \text{Q16)} \quad & x^2 + x - 42 \\ & x^2 + \underline{1x} - 42 \\ & \swarrow \searrow \\ & x^2 - \underline{6x} + 7x - 42 \\ & x(x-6) + 7(x-6) \\ & \boxed{(x-6)(x+7)} \end{aligned}$$