

$$\begin{aligned} 1. \quad a) \quad f(x) &= x^2 + 6x \\ &= x^2 + 6x + 9 - 9 \\ &= (x+3)^2 - 9 \end{aligned}$$

$$\begin{aligned} b) \quad f(x) &= 5x^2 + 40x + 15 \\ &= 5(x^2 + 8x) + 15 \\ &= 5(x^2 + 8x + 16 - 16) + 15 \\ &= 5[(x+4)^2 - 16] + 15 \\ &= 5(x+4)^2 - 80 + 15 \\ &= 5(x+4)^2 - 65 \end{aligned}$$

$$\begin{aligned} 2 \quad x^5 + 6x^4 + x^2 \\ = x^2(x^3 + 6x^2 + 1) \end{aligned}$$