

$$\begin{aligned} \text{b) } z &= (4 + 7i)(3 - 2i) = 12 + 13i - 14i^2 \\ &= 26 + 13i \end{aligned}$$

$$|z| = \sqrt{26^2 + 13^2} = 29.07$$

$$\theta = \tan^{-1}\left(\frac{13}{26}\right) = 26.57^\circ$$

$$z = 29.07 \angle 26.57^\circ$$

$$\begin{aligned} \text{c) } (1 + 3i)(1 + i) &= 1 + 4i + 3i^2 \\ &= -2 + 4i \\ &= 2(-1 + 2i) \end{aligned}$$