

$$\begin{aligned}
 3b) \quad z &= (4+7i)(3-2i) \\
 &= 12 - 8i + 21i - 14i^2 \\
 &= 12 + 13i + 14 \\
 &= 26 + 13i
 \end{aligned}$$

$$R = \sqrt{(26)^2 + (13)^2}$$

$$R = 13\sqrt{5} \approx 29.07$$

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

$$\theta = 26.57$$

$$\therefore 29.07 < 26.57$$

$$3c) \quad \frac{1+3i}{1+i} \times \frac{1-i}{1-i}$$

$$\frac{(1+3i)(1-i)}{(1+i)(1-i)} = \frac{1+2i-3i^2}{1-i^2}$$

$$= \frac{1+2i-3(-1)}{1-(-1)} = \frac{4+2i}{2}$$

$$= 2+i$$