

$$\begin{aligned}
 \text{(ii)} \quad & \frac{3}{(1+i)(2+i)} = \frac{3}{i^2 + 3i + 2} \\
 & = \frac{3}{3i + 1} \\
 & = \underline{\underline{\frac{3}{10} - \frac{9}{10}i}}
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii)} \quad & \frac{1+i}{1-i} - (1+2i)(2+2i) + \frac{3-i}{1+i} \\
 & 3 - 7i
 \end{aligned}$$

$$\begin{aligned}
 \text{(iv)} \quad & 2i(i-1) + (\sqrt{3}-i) + (1+i)(1+i) \\
 & = -2 + \sqrt{3} - i
 \end{aligned}$$

$$\text{b)} \quad z = (4+7i)(3-2i)$$

$$r = 13\sqrt{5} \quad \theta = \tan^{-1} 0.5$$

$$z = 26 + 13i$$

$$r = \sqrt{26^2 + 13^2} = 13\sqrt{5}$$

$$\theta = \tan^{-1} \left(\frac{\text{opp}}{\text{adj}} \right) = \tan^{-1} 0.5$$

$$\text{c)} \quad 1+3i \div 1+i = \underline{\underline{2+i}}$$