

LOUISE OAYGILL
2110765

Q3: a

$$\text{iii) } \frac{1+i}{1-i} - (1+2i)(2+2i) + \frac{3-i}{1+i}$$

$$\frac{1+i}{1-i} \times \frac{1+i}{1+i}$$

$$\begin{aligned} 1-1 &= 0 \\ i+i &= 2i \\ 1+1 &= 2 \\ i-i &= 0 \end{aligned}$$

$$a = \frac{0+2i}{2+0i}$$

$$\begin{aligned} b &= 2-4 = -2 \\ 2i+4i &= 6i \\ b &= -2+6i \end{aligned}$$

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

$$\begin{aligned} 3-2 &= 2 \\ -3i-i &= -4i \end{aligned}$$

$$\begin{aligned} 1+1 &= 2 \\ -i+i &= 0i \end{aligned}$$

$$c = \frac{2-4i}{2+0i}$$

$$= \frac{0+2i}{2+0i} - (-2+6i) + \frac{2-4i}{2+0i}$$

$$\frac{0}{2} - (-2) + \frac{2}{2} = 3$$

$$\frac{2i}{0i} - 6i + \frac{4}{0} i = \frac{0i}{0i} = 0i$$

ANS: 3+0i

$$\text{iv) } 2i(i-1) + (\sqrt{3}-i) + (1+i)(\overline{1+i})$$

a+b+c

$$\begin{aligned} a &= 2i \times (i-1) \\ 2 \times i &= 2i^2 = -2 \\ 2i \times -1 &= -2i \\ a &= -2-2i \end{aligned}$$

$$b = \sqrt{3} - i$$

$$c = (1+i)(\overline{1+i}) = \begin{array}{c|c|c|c} 1 \times 1 & 1 \times i & i \times 1 & i \times i \\ \hline 1 & -i & -i & -i^2 = 1 \end{array}$$

$$-1+1=0$$

$$-i-i=-2i$$

$$c = 0-2i$$