1B Multiplying & Dividing Complex Numbers

1. Express the following calculation in the form x + iy:

$$\frac{\sqrt{2}\left(cos\frac{\pi}{12}+isin\frac{\pi}{12}\right)}{2\left(cos\frac{5\pi}{6}+isin\frac{5\pi}{6}\right)}$$

2. Express $2e^{\frac{\pi i}{6}} \times \sqrt{3}e^{\frac{\pi i}{3}}$ in the form $x + iy$

3. $z = 2 + 2i$, $Im(zw) = 0$ and $|zw| = 3|z|$