Quadratic Equations Ex 14.2 Q2(i)

$$x^2 - \left(3\sqrt{2} + 2i\right)x + 6\sqrt{2i} = 0$$

$$\Rightarrow \quad x^2 - 3\sqrt{2}x - 2ix + \sqrt{2}i = 0$$
$$\Rightarrow \quad x\left(x - 3\sqrt{2}\right) - 2i\left(x - 3\sqrt{2}\right) = 0$$
$$\Rightarrow \quad \left(x - 2i\right)\left(x - 3\sqrt{2}\right) = 0$$

$$\Rightarrow \quad x = 2i \quad \text{or} \quad 3\sqrt{2}$$

Quadratic Equations Ex 14.2 Q2(ii)

$$x^2 - (5 - i)x + (18 + i) = 0$$

$$\Rightarrow \quad x^2 - 5x - ix + 18 + i = 0$$
$$\Rightarrow \quad x^2 - (3 - 4i)x - (2 + 3i)x + (18 + i) = 0$$
$$\Rightarrow \quad x\left(x - (3 - 4i)\right) - (2 + 3i)\left(x - (3 - 4i)\right) = 0$$
$$\Rightarrow \quad \left(x - (2 + 3i)\right)\left(x - (3 - 4i)\right) = 0$$

$$\Rightarrow \quad x = 2 + 3i \quad \text{or} \quad 3 - 4i$$

Quadratic Equations Ex 14.2 Q2(iii)

$$(2 + i)x^2 - (5 - i)x + 2(1 - i) = 0$$

$$\Rightarrow \quad (2 + i)x^2 - 2x - (3 - i)x + 2(1 - i) = 0$$
$$\Rightarrow \quad x\left[(2 + i)x - 2\right] - (1 - i)\left[(2 + i)x - 2\right] = 0$$
$$\Rightarrow \quad \left[x - (1 - i)\right]\left[(2 + i)x - 2\right] = 0$$

either $\left[x - (1 - i)\right] = 0$ or $\left[(2 + i)x - 2\right] = 0$

$$\Rightarrow \quad x = 1 - i \quad \text{or} \quad x = \frac{2}{2 + i}$$

$$\Rightarrow \quad x = 1 - i \quad \text{or} \quad x = \frac{2 \times 2 - i}{(2 + i)(2 - i)}$$

$$\text{or} \quad x = \frac{4 - 2i}{4 + 1} = \frac{4}{5} - \frac{2}{5}i$$

Thus,

$$x = 1 - i, \qquad \frac{4}{5} - \frac{2}{5}i$$

********** END **********