

Complex Numbers Q16– Practice/Y1/E (22/5/21)

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Solution

(a) Let $z = a + bi$

$$\text{Then } (2 + i)(a + bi) + 3 = 0$$

$$\Rightarrow 2a - b + (a + 2b)i + 3 = 0$$

$$\text{Equating real parts: } 2a - b = -3 \quad (1)$$

$$\text{Equating imaginary parts: } a + 2b = 0 \quad (2)$$

Substituting for a from (2) into (1), $2(-2b) - b = -3$ and $\therefore b = \frac{3}{5}$ and $a = -\frac{6}{5}$

$$\text{so that } z = -\frac{6}{5} + \frac{3i}{5}$$

$$(b) (2 + i)z + 3 = 0 \Rightarrow z = \frac{-3}{2+i} = \frac{-3(2-i)}{(2+i)(2-i)} = \frac{-6+3i}{4+1} = -\frac{6}{5} + \frac{3i}{5}$$