Question 5 **(25 marks)**
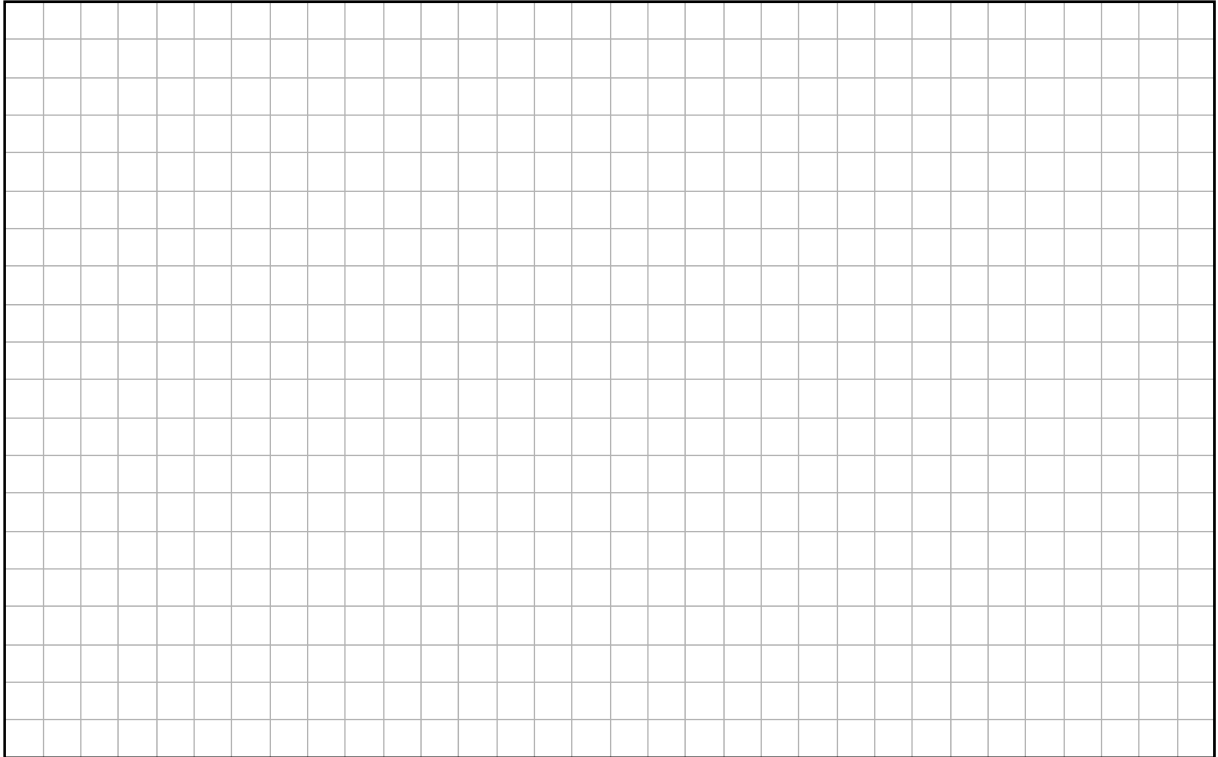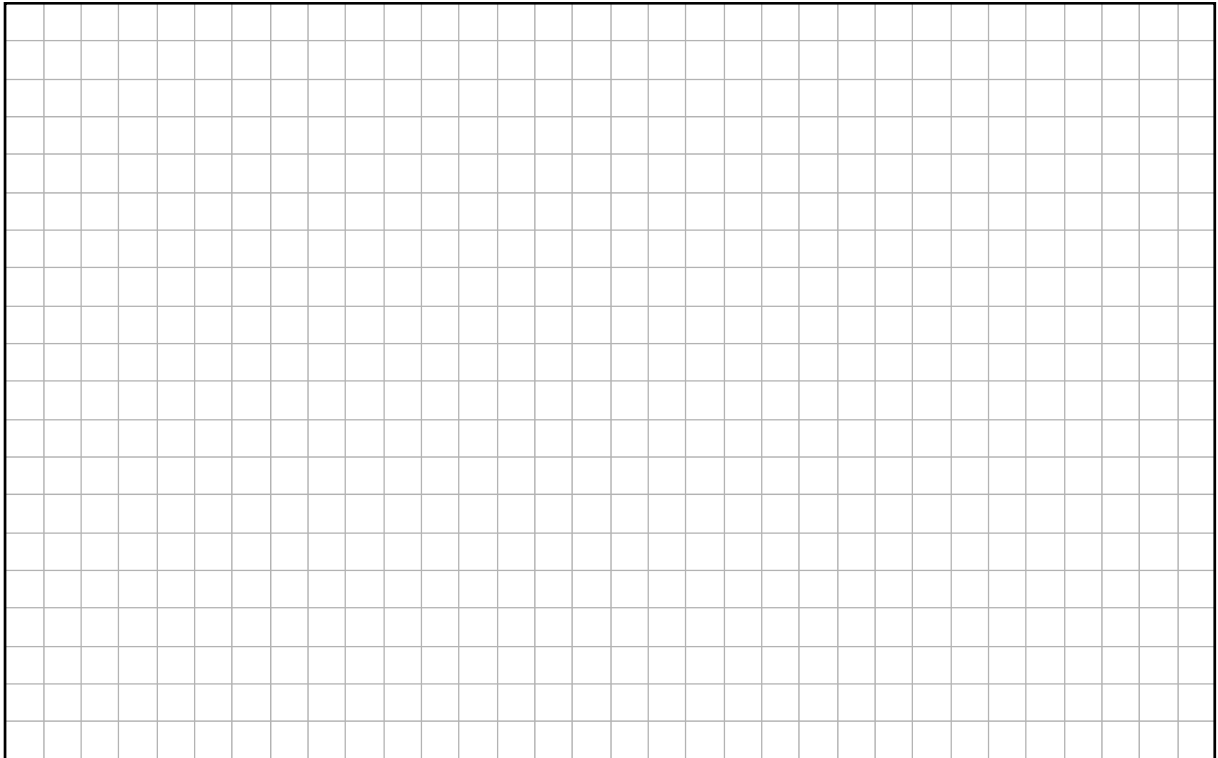
(a) $3 + 2i$ is a root of $z^2 + pz + q = 0$, where $p, q \in \mathbb{R}$, and $i^2 = -1$.
Find the value of p and the value of q.

(b) (i) $v = 2 - 2\sqrt{3}i$. Write v in the form $r(\cos\theta + i\sin\theta)$,
where $r \in \mathbb{R}$ and $0 \leq \theta \leq 2\pi$.

(ii) Use your answer to **part (b)(i)** to find the **two** possible values of w, where $w^2 = v$.
Give your answers in the form $a + ib$, where $a, b \in \mathbb{R}$.