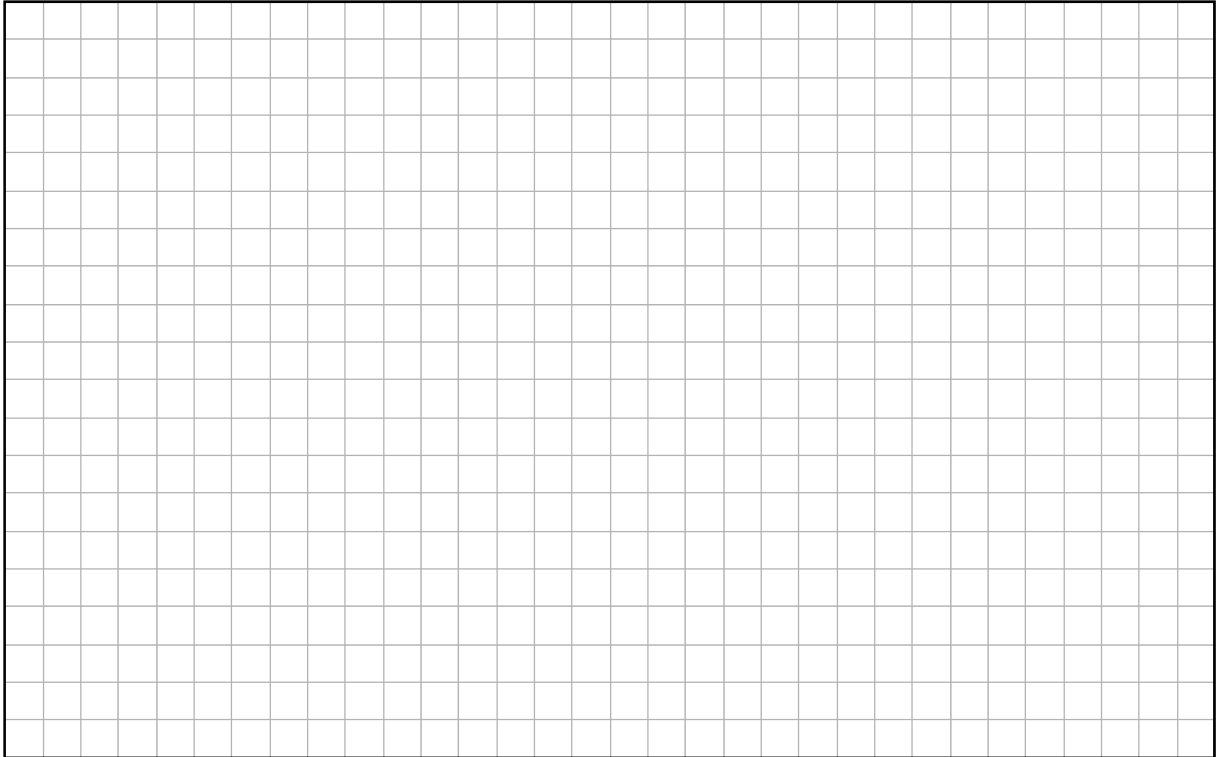
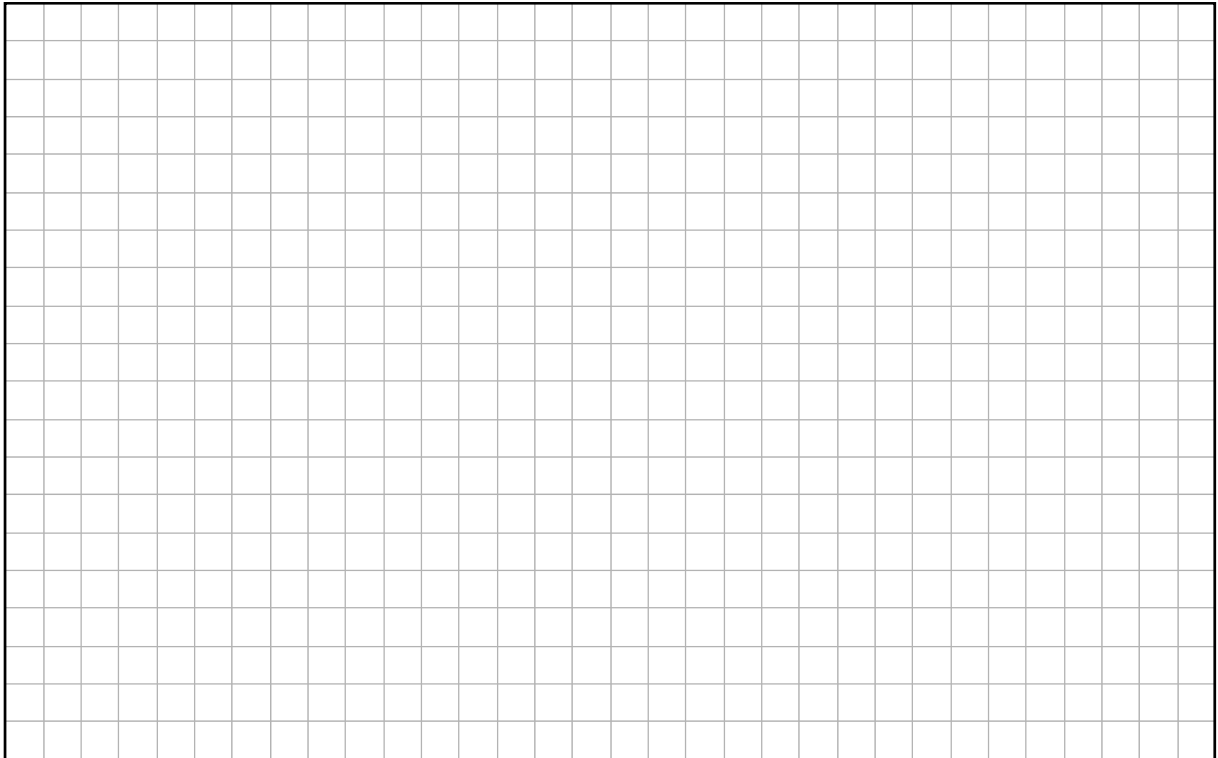


**Question 5****(25 marks)**

- (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  $a, b \in \mathbb{R}$ .

