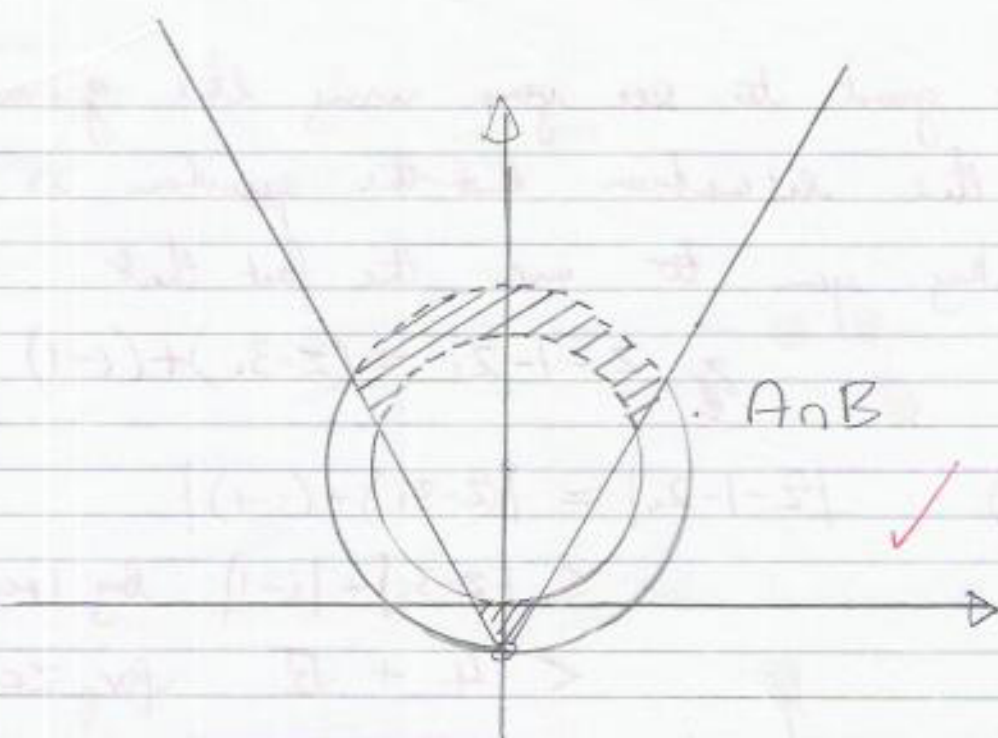
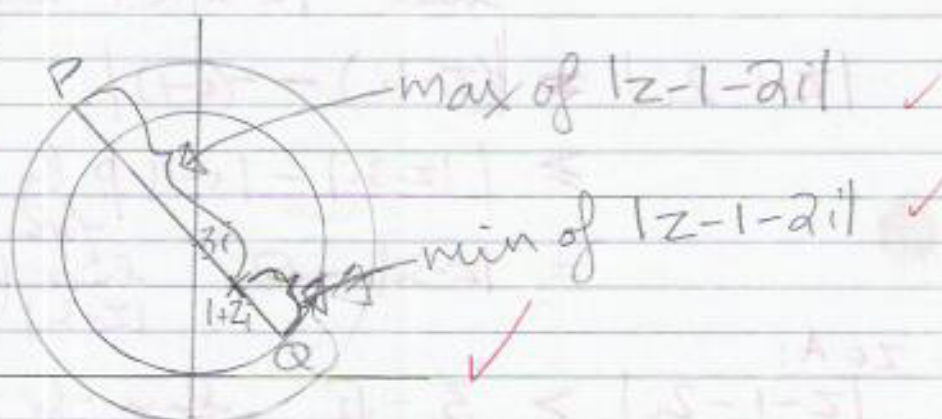


3

6A

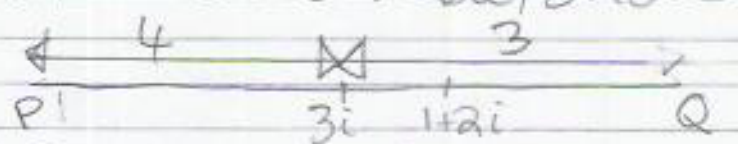


ii)



By the symmetry of the problem, both min and max of $|z-1-2i|$ lie on the same line, shown below

P.T.O



$$\begin{aligned} \text{Left side: } 4 + |1+2i-3i| &= 4 + |1-i| = 4 + \sqrt{2} \\ \text{Right side: } 3 - |1+2i-3i| &= 3 - |1-i| = 3 - \sqrt{2} \end{aligned}$$

2M
4

$$\text{ie } 3 - \sqrt{2} < |z-1-2i| < 4 + \sqrt{2}$$

$$\text{iii) } 3 - \sqrt{2} < |z-1-2i| < 4 + \sqrt{2}$$

$$\text{so } \frac{3 - \sqrt{2}}{|z-3i|} < \frac{|z-1-2i|}{|z-3i|} < \frac{4 + \sqrt{2}}{|z-3i|}$$

since $|z-3i| > 3 \neq 0$ ✓ for $z \in A$