

Question	Scheme	Marks	AOs
5(a)	Uses $\left \overline{AB}\right =5\sqrt{2} \Rightarrow 5^2+(p-3)^2=(5\sqrt{2})^2$	M1	1.1b
	Solves to find at least one value for $p \Rightarrow (p-3)^2=25 \Rightarrow p=...$	M1	1.1b
	$p=-2, 8$	A1	2.1
		(3)	
(b)	$\overline{AC}=(q+2)\mathbf{i}+4\mathbf{j}$	M1	1.1b
	Uses $\tan\left(\frac{\pi}{3}\right)=\frac{4}{q+2}$ with $\tan\left(\frac{\pi}{3}\right)=\sqrt{3}$ to find q	dM1	2.1
	$q=\frac{4}{\sqrt{3}}-2$ or $\frac{4\sqrt{3}}{3}-2$ or other exact form	A1	1.1b
		(3)	

(6 marks)

Notes:

(a)

M1: Uses Pythagoras' theorem in an attempt to form an equation in p . There must be an attempt to subtract the coordinates to find $\overline{AB}$

M1: Uses a correct method to find at least one value of p from their quadratic equation

A1: Uses all steps correctly to find $p=-2, 8$

(b)

M1: Attempts to finds $\overline{AC}$ by subtracting components

dM1: Uses correct trigonometry to set up an equation in q . To score this mark $\tan\left(\frac{\pi}{3}\right)=\sqrt{3}$ or equivalent must be used

A1: $q=\frac{4}{\sqrt{3}}-2$ or $\frac{4\sqrt{3}}{3}-2$ or other exact form