Question			Answer	Marks	AO	Guidance
2	(a)		$\tan^{-1}(-3)$	M1	1.1	• $\tan^{-1}(\pm 3)$ OR $\tan^{-1}(\pm\frac{1}{3})$ OR $\cos^{-1}(\pm\frac{1}{\sqrt{10}})$ OR $\sin^{-1}(\frac{3}{\sqrt{10}})$ OR 71.6° OR 18.4° OR 1.25 radians OR 0.322 radians • Angle may be negative, or to 2 s.f. • Implied by correct answer
			108.4°	A1	1.1	• OR 1.89 radians (3 s.f.) or allow 1.9 radians (2 s.f.) • Mark final answer but ignore subsequent rounding • Allow 108° (3 s.f.) or 110° (2 s.f.) • Allow more accurate values: For reference: 108.4349488…° or 1.89254… radians
				[2]		
2	(b)		$\begin{pmatrix}-1\\9+y\end{pmatrix}$	B1	1.1	• Finding correct expression for $3\mathbf{p}+\mathbf{s}$ – must be simplified • Allow $-1\mathbf{i}+9\mathbf{j}+y\mathbf{j}$ but **not** $-3\mathbf{i}+2\mathbf{i}$ for the **i** component • Condone omission of brackets
			$\lvert 3\mathbf{p}+\mathbf{s}\rvert = \sqrt{(-1)^2+(9+y)^2}$ oe OR $\lvert 3\mathbf{p}+\mathbf{s}\rvert^2 = 1+(9+y)^2$	M1	3.1a	• Finds magnitude of *their* $3\mathbf{p}+\mathbf{s}$ • OR states *their* $9+y=0$ will give the minimum magnitude. • OR differentiates *their* $y^2+18y+82$ oe and states minimum when *their* $2y+18$ is 0 • Implied by correct answer
			[Minimum when] $y=-9$	A1FT	2.2a	• FT *their* $3\mathbf{p}+\mathbf{s}$ in the form $\begin{pmatrix}a\\b+y\end{pmatrix}$ where a,b integers i.e. $y=-b$
				[3]		