Question	Scheme	Marks	AOs
13(a)	$7\mathbf{i}+5\mathbf{j}+2(7-1)\mathbf{i}+2(5+3)\mathbf{j}$	M1	3.1a
	$=19\mathbf{i}+21\mathbf{j}$	A1	1.1b
		(2)	
(b)	$\left|\overrightarrow{AD}\right|=\sqrt{17}=\sqrt{1^2+(p-1)^2}\Rightarrow p=...$	M1	2.1
	$p=-3,\ (5)$	A1	1.1b
	$\left|\overrightarrow{AB}\right|=\sqrt{6^2+8^2}=10$ and $\left|\overrightarrow{DB}\right|=\sqrt{(7-2)^2+(5-("-3"-4))^2}=13$	M1	2.2a
	$\cos DAB=\dfrac{17+100-169}{2\times\sqrt{17}\times10}\Rightarrow$ angle $DAB=...$	dM1	3.1a
	angle $DAB=$ awrt $129.1°$	A1	1.1b
		(5)	
		(7 marks)	
	Notes		

(a)

M1: Complete attempt to find the position vector of *C*

A1: $19\mathbf{i}+21\mathbf{j}$ accept column vector notation

(b)

M1: Attempts to form the equation using the magnitude of *AD* and proceeds to find a value for *p*. May be implied by sight of $(2,-7)$

A1: -3 (ignore the presence or absence of 5). Implied by $(2,-7)$ which may appear on a diagram.

M1: Deduces $\left|\overrightarrow{BD}\right|$ needs to be as big as possible so uses their $p=-3$ and attempts to find the magnitude of both *AB* and *DB*. Their value for *p* must be the one which gives the greater magnitude for *BD*. You may not see any reference to the other value for *p* if it was rejected when found. May be implied by further work.

dM1: Attempts the cosine rule with the lengths in the correct places and proceeds to find angle *DAB*. Condone slips. It is dependent on the previous method mark. May work in radians which is acceptable.

A1: awrt 129.1 (must be in degrees)