Q	Marking instructions	AO	Marks	Typical solution
11(a)	Obtains correct centre.	1.1b	B1	$x^2 - 10x + 25 + y^2 = 31$ $(x-5)^2 + y^2 = 31$ Centre is (5, 0) and radius $\sqrt{31}$
	Obtains correct radius. AWRT 5.6	1.1b	B1	
	Subtotal		**2**	

Q	Marking instructions	AO	Marks	Typical solution
11(b)(i)	Shows that origin is inside circle	2.1	R1	Distance from centre to origin is 5 and $5 < \sqrt{31}$ so vertex at origin is inside circle
	Subtotal		**1**	

Q	Marking instructions	AO	Marks	Typical solution
11(b)(ii)	Selects an appropriate method to find the y coordinate of at least one other vertex. Condone one slip in the formation of the equation for the y coordinate.	3.1a	M1	$\tan 30^\circ = \frac{y}{8}$ so $y = 8\tan 30^\circ$ The other vertices are $(8, \pm \frac{8}{\sqrt{3}})$ Distance from centre to other vertices is $\sqrt{(3^2 + \frac{64}{3})} = \sqrt{(\frac{91}{3})} < \sqrt{31}$ Both vertices are inside circle Complete triangle is inside circle
	Uses distance formula for distance from their centre to at least one vertex. or Find at least one y value on the circle when $x = 8$ NB Correct vales are $y = \pm\sqrt{22}$	3.1a	M1	
	Compares $\sqrt{(\frac{91}{3})}$ with $\sqrt{31}$ AWRT 5.5 and 5.6 or Compares $\frac{8}{\sqrt{3}}$ with $\sqrt{22}$ AWRT 4.6 and 4.7 **and** Deduces that one other vertex is inside circle.	2.2a	A1	
	Completes proof that triangle is completely inside circle, either by proof for the third vertex or by reference to symmetry.	2.1	R1	
	Subtotal		**4**	

	Question 11 Total		**7**	