Question		Answer	Marks	AO	Guidance
8	(a)	Equation $(x+1)^2+(y-5)^2[=20]$	M1	1.1	Attempts to complete the square for both x and y terms. Allow sign errors in the brackets
		Centre $(-1, 5)$	A1	1.1	cao
		Radius $\sqrt{20}\ [=2\sqrt{5}]$	A1	1.1	Any exact form
			[3]		
	(b)	The centre of the circle is 5 units above the axis and the radius is less than 5, so it will not cross the x-axis	B1	2.1	Must compare their radius with their centre. Do not accept arguments based on intersection with the x-axis and the discriminant
			[1]		
	(c)	P is the point (3, 7)			
		Gradient of PC is $\frac{2}{4}$	M1	3.1a	soi FT their centre
		Gradient of tangent is -2	M1	1.1	Soi FT $\frac{-1}{\text{their gradient of PC}}$
		Alternative method for finding gradient			
		$2x+2y\frac{dy}{dx}+2-10\frac{dy}{dx}=0$	M1		Uses implicit differentiation
		$2\times3+2\times7\frac{dy}{dx}+2-10\frac{dy}{dx}=0$ so $\frac{dy}{dx}=-2$	M1		Uses (3, 7) leading to a value for $\frac{dy}{dx}$
		So $y-7=-2(x-3)$ [giving $y+2x=13$]	M1	2.1	Uses their gradient (not that of PC) to form equation soi
		When $x=0, y=13$ and when $y=0, x=\frac{13}{2}$	M1	1.1	Substitutes both $x=0$ and $y=0$ to find the points of intersection
		So area of triangle is $\frac{1}{2}\times\frac{13}{2}\times13=\frac{169}{4}$	A1	1.1	cao
			[5]		