Q	Marking instructions	AO	Marks	Typical solution
9(a)	Obtains $(x-10)^2$…or $(y-6)^2$ … **PI** by 10 for x or 6 for y	3.1a	M1	$(x-10)^2+(y-6)^2-136=k$ Centre (10, 6)
	Obtains (10, 6)	1.1b	A1	
	Subtotal		**2**	

Q	Marking instructions	AO	Marks	Typical solution
9(b)	Obtains gradient of tangent $\frac{1}{2}$ **PI** by gradient of $AB=-2$	1.1b	M1	$m=\frac{1}{2}$ $y-6=-2(x-10)$ $2x+y=26$
	Obtains gradient of $AB=-2$ **PI** in the equation of line	3.1a	A1	
	Forms an equation of a line using gradient of –2 and their centre from part **(a)** Must use negative reciprocal of their gradient of tangent	1.1a	M1	
	Obtains $2x+y=26$ Allow any integer multiple	2.1	A1	
	Subtotal		**4**	

Q	Marking instructions	AO	Marks	Typical solution
9(c)	Obtains coordinates B (7.5, 11) **PI** by $\frac{5\sqrt{5}}{2}$	3.1a	B1	$4y-2x=29$ $2x+y=26$ Hence B (7.5, 11)
	Substitutes their coordinates of *B* and their centre from part **(a)** into Pythagoras theorem or Substitutes their coordinates of *B* into the equation of circle	3.1a	M1	$r^2=(7.5-10)^2+(11-6)^2$ $=\frac{125}{4}$ $r=\frac{5\sqrt{5}}{2}$
	Obtains $\frac{5\sqrt{5}}{2}$ **OE**	1.1b	A1	
	Subtotal		**3**	

	Question 9 Total		**9**	