

Question		Answer	Marks	AOs	Guidance
8	(a)	Radius = 5 (2, -3)	B1 B1 [2]	1.1 1.1	
8	(b)	$(y+3)^2 = 21$ or $y^2 + 6y - 12 = 0$ Roots $-3 + \sqrt{21}$ and $-3 - \sqrt{21}$ $(0, -3 + \sqrt{21})$ and $(0, -3 - \sqrt{21})$	M1 A1 A1 [3]	1.1a 1.1 1.1	Substituting $x=0$ and rearranging For one y -value All correct
8	(c)	$(1-2)^2 + (2+3)^2 = 1^2 + 5^2$ E.g. This is more than 25 so outside the circle	M1 A1 [2]	1.1 1.1	Or distance of (1, 2) from their centre Or distance of (1, 2) from centre is $\sqrt{26} > 5$, so outside the circle
8	(d)	Gradient CP = $\frac{1-(-3)}{-1-2} = -\frac{4}{3}$ FT their C(entre) Gradient of tangent = $\frac{3}{4}$ FT their grad CP Equation of tangent $y-1 = \frac{3}{4}(x-(-1))$ FT their grad $4y = 3x + 7$ oe	M1 M1 M1 A1 [4]	1.1a 1.1 1.1 1.1	