Question	Answer	Marks	Partial Marks
5(a)	Centre $(5, 12)$ soi	**B1**	
	Gradient of radius = $\frac{12-4}{5-11}$ $\left(=-\frac{4}{3}\right)$	**M1**	
	Equation of normal: $y-4=\frac{3}{4}(x-11)$	**M1**	Must be using *their* perpendicular gradient and the correct point
	$3x-4y=17$	**A1**	
5(b)	Distance between centres = 13 Sum of radii = 12	**M1**	For both
	$13>12$ so no intersection	**A1**	
6	$8(\ln x)^2-10\ln x+3$ $(=0)$	**2**	**M1** for elimination of y and re-arrangement to a 3 term quadratic in terms of $\ln x$
	$\ln x=0.75,\quad \ln x=0.5$	**2**	**Dep** on previous **M** mark for correct method of solution
	$x=e^{0.75},\quad x=e^{0.5}$	**A1**	For both
7(a)	$\frac{1}{2}\times 6\times 6\times\sin\theta=9$ oe	**M1**	
	$\sin\theta=\frac{1}{2}$	**A1**	
7(b)	$\frac{1}{2}(36)(\theta-their\sin\theta)=15\pi-9$ oe	**M1**	
	$\theta=\frac{5\pi}{6}$	**A1**	
	5π	**2**	**M1** for $6\times their\frac{5\pi}{6}$, but not $\frac{\pi}{6}$
8(a)	$\frac{5}{2}$, 1	**B1**	

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