6	(a)		**DR**			$4xy = 2(x^2 + 4y^2) - 9x$	
				M1	1.1	For correct differentiation of either LHS or RHS, even if not in an equation	
			$4y + 4x\dfrac{dy}{dx} = 4x + 16y\dfrac{dy}{dx} - 9$	**A1**	1.1		
			$4x\dfrac{dy}{dx} - 16y\dfrac{dy}{dx} = 4x - 4y - 9 \Rightarrow \dfrac{dy}{dx} = \dfrac{4x - 4y - 9}{4x - 16y}$	**A1**	2.1	**AG** (at least one line of working from correct differentiation to given answer)	
					[3]		
6	(b)		**DR**				
			(At P) $4x - 16y = 0$	**M1***	3.1a		
			$x = 4y \Rightarrow 16y^2 = 2(16y^2 + 4y^2) - 36y$	**M1dep***	2.1	Forms two-term quadratic equation in y or x (if correct $x^2 - 6x = 0$)	$y \neq 0$ not required
			$24y^2 - 36y = 0$				
			$y(2y - 3) = 0 \Rightarrow y = \frac{3}{2}$	**A1**	1.1		
			$P\left(6, \frac{3}{2}\right)$				
			(At Q) $4x - 4y - 9 = 0$	**M1***	3.1a		
			$\Rightarrow 4x\left(x - \frac{9}{4}\right) = 2x^2 + 8\left(x - \frac{9}{4}\right)^2 - 9x$	**M1dep***	2.1	Forms three-term quadratic equation in y or x	
			$4x^2 - 24x + 27 = 0$			(if correct $16y^2 - 24y - 27 = 0$)	
			$Q\left(\frac{3}{2}, -\frac{3}{4}\right)$ only	**A1**	3.2a		**A0** if $\left(\frac{9}{2}, \frac{9}{4}\right)$ is given as possible coordinates for Q
			$PQ^2 = \left(6 - \frac{3}{2}\right)^2 + \left(\frac{3}{2} - \left(-\frac{3}{4}\right)\right)^2$	**M1**	1.1	Correct implies distance formula for their P and Q	Dependent on all previous **M** marks
			$PQ = \frac{9}{4}\sqrt{5}$	**A1**	2.2a	www	$k = \frac{9}{4}$
					[8]		