Question Number	Scheme	Notes	Marks
2(a)	$x = 3y - 3, xy = 36 \Rightarrow y(3y-3) = 36 \Rightarrow 3y^2 - 3y - 36 = 0$ or $y = \frac{x}{3} + 1 \Rightarrow x\left(\frac{x}{3}+1\right) = 36 \Rightarrow \frac{x^2}{3} + x = 36$ or $6t - \frac{18}{t} + 3 = 0 \Rightarrow 6t^2 + 3t - 18 = 0$	Eliminates x or y to form an equation in a single variable or Substitutes $x = 6t$ and $y = \frac{6}{t}$ into l and obtains an equation in t only Condone numerical slips that lead to incorrect coefficients in the 3TQ, or to e.g. $xy = 6$.	**M1**
	$y^2 - y - 12 = (y-4)(y+3) = 0 \Rightarrow y = 4, -3$ or $x^2 + 3x - 108 = (x-9)(x+12) = 0 \Rightarrow x = 9, -12$ or $2t^2 + t - 6 = (2t-3)(t+2) = 0 \Rightarrow t = \frac{3}{2}, -2$ $\Rightarrow (9, 4), (-12, -3)$	**Note: Both A marks require a non-calculator solution to a 3TQ. Usual rules, but any factorisation that is inconsistent with their 3TQ is A0A0.** A1: Any two of the four correct coordinates. A1: All four correct coordinates, obtained, paired correctly. Condone $x = \ldots$, $y = \ldots$ if clearly paired correctly.	**A1** **A1**
			(3)
(b)	$\{y = 36x^{-1}\}$ $\frac{dy}{dx} = -\frac{36}{x^2}$	$\{xy = 36\}$ $y + x\frac{dy}{dx} = 0$ $\frac{dy}{dx} = -\frac{y}{x}$	$\left\{x = ct \quad y = \frac{c}{t}\right\}$ $\frac{dx}{dt} = c \quad \frac{dy}{dt} = -\frac{c}{t^2}$ $\frac{dy}{dx} = -\frac{1}{t^2}$ May use $c = 6$
	Differentiates the equation of the curve to obtain a correct expression for $\frac{dy}{dx}$ No calculus is B0, but allow the next two marks.		**B1**
	$m_T = -\frac{1}{4} \Rightarrow y - (-3) = -\frac{1}{4}(x - (-12))$ or $-3 = -\frac{1}{4}(-12) + c \Rightarrow c = -6$ {leading to $y = -\frac{1}{4}x - 6$} $0 = -\frac{1}{4}x - 6 \Rightarrow x = \ldots$	Forms equation of tangent with the numerical value for their $\frac{dy}{dx}$ and their coordinates of P (where $x < 0$) correctly placed. Must set $y = 0$ and obtain $x = \ldots$ M0 for attempts at a normal.	**M1**
	$x = -24$	Correct x coordinate	**A1**
			(3)
			Total 6