

Question 3 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{dy}{dx} = \frac{(x+6)^2 \times (18x+54) - (9x^2 + 54x) \times 2(x+6)}{(x+6)^4}$	M1	This mark is given for an attempt to differentiate the expression for y
		A1	This mark is given for correctly differentiating the expression for y
	$\frac{dy}{dx} = \frac{(18x+54)(x+6) - 18x^2 - 108x}{(x+6)^3}$	M1	This mark is given for cancelling the expression through by $(x+6)$
	$\frac{dy}{dx} = \frac{54x+324}{(x+6)^3} = \frac{54(x+6)}{(x+6)^2}$ $\frac{dy}{dx} = \frac{54}{(x+6)^2}$	A1	This mark is given for a fully correct expression for $\frac{dy}{dx}$
(b)	Given $x \neq -6$, $(x+6)^2$ will always be positive, and 54 divided by a positive will give a positive answer. Therefore $\frac{dy}{dx} > 0$	B1	This mark is given for a clear explanation.