

Q	Marking Instructions	AO	Marks	Typical Solution								
11	Obtains $\frac{dy}{dx}$ for both the given curves – at least one term must be correct for each curve	AO3.1a	M1	$\frac{dy}{dx} = 6x^2 + 12x - 12$ $\frac{dy}{dx} = 60 - 12x$								
	States both derivatives correctly	AO1.1b	A1									
	Translates problem into an inequality	AO3.1a	M1	Chris's claim is incorrect when $6x^2 + 12x - 12 \leq 60 - 12x$ $2x^2 + 8x - 24 \leq 0$ $x^2 + 4x - 12 \leq 0$ $(x + 6)(x - 2) \leq 0$ Critical values are $x = -6$ and 2 <table border="1"><tr><td>region</td><td>$x < -6$</td><td>$-6 < x < 2$</td><td>$x > 2$</td></tr><tr><td>sign</td><td>+</td><td>–</td><td>+</td></tr></table> $-6 \leq x \leq 2$ Chris's claim is incorrect for values of x in the range $-6 \leq x \leq 2$, so he is wrong	region	$x < -6$	$-6 < x < 2$	$x > 2$	sign	+	–	+
	region	$x < -6$	$-6 < x < 2$		$x > 2$							
	sign	+	–		+							
	States a correct quadratic inequality FT from an incorrect $\frac{dy}{dx}$ provided both M1 marks have been awarded	AO1.1b	A1									
	Determines a solution to 'their' inequality	AO1.1a	M1									
Obtains correct range of values for x Must be correctly written with both inequality signs correct	AO1.1b	A1										
Interprets final solution in context of the original question, must refer to Chris's claim	AO3.2a	R1										
	Total		7									