

Question	Scheme	Marks	AOs
6	Considers $\frac{3(x+h)^2 - 3x^2}{h}$	B1	2.1
	Expands $3(x+h)^2 = 3x^2 + 6xh + 3h^2$	M1	1.1b
	So gradient = $\frac{6xh + 3h^2}{h} = 6x + 3h$ or $\frac{6x\delta x + 3(\delta x)^2}{\delta x} = 6x + 3\delta x$	A1	1.1b
	States as $h \rightarrow 0$, gradient $\rightarrow 6x$ so in the limit derivative = $6x^*$	A1*	2.5

(4 marks)

Notes:

B1: Gives correct fraction as in the scheme above or $\frac{3(x+\delta x)^2 - 3x^2}{\delta x}$

M1: Expands the bracket as above or $3(x+\delta x)^2 = 3x^2 + 6x\delta x + 3(\delta x)^2$

A1: Substitutes correctly into earlier fraction and simplifies

A1*: Uses Completes the proof, as above (may use $\delta x \rightarrow 0$), considers the limit and states a conclusion with no errors