Question number	Scheme	Marks
4	$\dfrac{dy}{dx}=\dfrac{2\cos 2x\left(x^2-9\right)^{\frac{1}{2}}-\frac{1}{2}\times 2x\sin 2x\left(x^2-9\right)^{-\frac{1}{2}}}{\left(x^2-9\right)}$	M1A1A1
	$\left\{\dfrac{dy}{dx}=\dfrac{\dfrac{2\cos 2x\left(x^2-9\right)^{\frac{1}{2}}\left(x^2-9\right)^{\frac{1}{2}}-\frac{1}{2}\times 2x\times\sin 2x}{\left(x^2-9\right)^{\frac{1}{2}}}}{\left(x^2-9\right)}\right\}$	
	$\dfrac{dy}{dx}=\dfrac{2\left(x^2-9\right)\cos 2x-x\sin 2x}{\sqrt{\left(x^2-9\right)^3}}$ *	dM1A1 cso [5]
	ALT	
	$y=\sin(2x)\,(x^2-9)^{-\frac{1}{2}}$	
	$\dfrac{dy}{dx}=2\cos(2x)(x^2-9)^{-\frac{1}{2}}+\sin(2x)\left(-\frac{1}{2}\right)(2x)(x^2-9)^{-\frac{3}{2}}$	[M1A1A1
	$\left\{\dfrac{dy}{dx}=\dfrac{2\cos(2x)(x^2-9)-x\sin(2x)}{(x^2-9)^{\frac{3}{2}}}\right\}$	
	$\dfrac{dy}{dx}=\dfrac{2(x^2-9)\cos(2x)-x\sin(2x)}{\sqrt{(x^2-9)^3}}$ *	dM1A1 cso]
		Total 5 marks

Mark	Notes
M1	For an attempt at Quotient rule. The definition of an attempt is that there must be a correct attempt to differentiate at least one term and the denominator must be $\left(\sqrt{x^2-9}\right)^2$. Allow the terms in the numerator to be the wrong way around, but the terms must be subtracted. Attempt at differentiation of the terms: $\sin(2x)\to k\cos(2x)$ where k is an integer $(x^2-9)^{\frac{1}{2}}\to lx(x^2-9)^{-\frac{1}{2}}$
A1	For correct differentiation of at least one term. $2\cos(2x)\,(x^2-9)^{\frac{1}{2}}$ or $-\frac{1}{2}\times 2x\sin 2x\,(x^2-9)^{-\frac{1}{2}}$
A1	For a fully correct Quotient rule $\dfrac{dy}{dx}=\dfrac{2\cos 2x(x^2-9)^{\frac{1}{2}}-\frac{1}{2}\times 2x\sin 2x(x^2-9)^{-\frac{1}{2}}}{(x^2-9)}$

dM1	For an attempt to rearrange to the given form. Dependent on M1 being scored. An attempt requires obtaining a single fraction and multiplying numerator and denominator by $(x^2-9)^{\frac{1}{2}}$ (see {} in mark scheme).
A1 **cso**	Fully correct method to show $\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{2(x^2-9)\cos 2x-x\sin 2x}{\sqrt{(x^2-9)^3}}$ Allow with $\sqrt{(x^2-9)^3}$ given as $(x^2-9)^{\frac{3}{2}}$ or $\sqrt{(x^2-9)}^3$
ALT – product rule	
M1	For an attempt at Product rule. The definition of an attempt is that there must be a correct attempt to differentiate at least one term. Attempt at differentiation of the terms: $\sin(2x)\left(x^2-9\right)^{-\frac{1}{2}} \rightarrow k\cos(2x)\left(x^2-9\right)^{-\frac{1}{2}}$ where k is an integer $\sin(2x)\,(x^2-9)^{-\frac{1}{2}} \rightarrow lx\sin(2x)\,(x^2-9)^{-\frac{3}{2}}$
A1	For correct differentiation of at least one term. Either $2\cos(2x)(x^2-9)^{-\frac{1}{2}}$ or $\sin(2x)\left(-\frac{1}{2}\right)(2x)(x^2-9)^{-\frac{3}{2}}$
A1	For a fully correct Product rule $\frac{\mathrm{d}y}{\mathrm{d}x}=2\cos(2x)(x^2-9)^{-\frac{1}{2}}+\sin(2x)\left(-\frac{1}{2}\right)(2x)(x^2-9)^{-\frac{3}{2}}$
dM1	For an attempt to rearrange to the given form. Dependent on M1 being scored. An attempt requires obtaining a single fraction and multiplying numerator and denominator by $(x^2-9)^{\frac{3}{2}}$ (see {} in mark scheme).
A1 **cso**	Fully correct method to show $\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{2(x^2-9)\cos 2x-x\sin 2x}{\sqrt{(x^2-9)^3}}$ Allow with $\sqrt{(x^2-9)^3}$ given as $(x^2-9)^{\frac{3}{2}}$ or $\sqrt{(x^2-9)}^3$