Question	Answer	Marks	Guidance
(a)	Use chain rule at least once	M1	Needs $\dfrac{\mathrm{d}y}{\mathrm{d}t} = \dfrac{1}{\tan t}\dfrac{\mathrm{d}}{\mathrm{d}t}(\tan t)$ or $\dfrac{\mathrm{d}x}{\mathrm{d}t} = (-1)(\cos^{-2}t)\dfrac{\mathrm{d}}{\mathrm{d}t}(\cos t)$. BOD if + and $(-1)(-1)$ not seen. $\dfrac{\mathrm{d}x}{\mathrm{d}t} = \sec t \tan t$ (from List of Formulae MF19) M1 A1. If $\dfrac{\mathrm{d}x}{\mathrm{d}t} = -\sec t \tan t$ M1 A0.
	Obtain $\dfrac{\mathrm{d}x}{\mathrm{d}t} = \sec t \tan t$	A1	OE e.g. $\sin t \,(\cos t)^{-2}$. If e.g. $\dfrac{\mathrm{d}x}{\mathrm{d}t} = \sec x \tan x$ or $\sec\theta\tan\theta$ or $\sec t \tan x$, condone recovery on next line.
	Obtain $\dfrac{\mathrm{d}y}{\mathrm{d}t} = \dfrac{\sec^2 t}{\tan t}$	A1	OE e.g. $\dfrac{1}{\sin t \,\cos t}$. If e.g. $\dfrac{\mathrm{d}y}{\mathrm{d}t} = \dfrac{\sec^2 x}{\tan x}$ or $\dfrac{\sec^2\theta}{\tan\theta}$, condone recovery on next line. Only penalise notation errors **once** in $\dfrac{\mathrm{d}x}{\mathrm{d}t}$ and $\dfrac{\mathrm{d}y}{\mathrm{d}t}$ if no recovery.
	Use $\dfrac{\mathrm{d}y}{\mathrm{d}x} = \dfrac{\mathrm{d}y}{\mathrm{d}t} \div \dfrac{\mathrm{d}x}{\mathrm{d}t}$	M1	Allow even if previous M0 scored, but must be using derivatives.
	Obtain given answer $\dfrac{\cos t}{\sin^2 t}$	A1	AG After $\dfrac{\mathrm{d}y}{\mathrm{d}x} = \dfrac{\mathrm{d}y}{\mathrm{d}t} \div \dfrac{\mathrm{d}x}{\mathrm{d}t}$ used, any notation error A0. Must cancel cos t correctly.
		5	

Question	Answer	Marks	Guidance
(b)	State or imply $t = \frac{1}{4}\pi$ when $y = 0$	**B1**	
	Form the equation of the tangent at $y = 0$ or find c	**M1**	$x = \sqrt{2}$, $\frac{dy}{dx} = \sqrt{2}$ and $y = 0$, *their* coordinates and gradient used in $y = mx + c$.
	Obtain answer $y = \sqrt{2}x - 2$	**A1**	OE e.g. $y = \sqrt{2}\,(x - \sqrt{2})$ ISW. Allow $y = 1.41x - 2[.00]$ or $1.41(x - 1.41)$.
		3	