

Question		Answer	Marks	AOs	Guidance
8	(i)	$\frac{dx}{dt} = \frac{(1+t^3) - t(3t^2)}{(1+t^3)^2}$	M1	1.1a	<b>DR</b> Use of quotient rule – may be gained for $\frac{dy}{dt}$ if $\frac{dx}{dt}$ not seen (allow $\pm$ )  Substitution into <i>their</i> $\frac{dy}{dx}$ dep on earlier M1
		$\frac{dx}{dt} = \frac{(1-2t^3)}{(1+t^3)^2}$ oe	A1	1.1	
		$\frac{dy}{dt} = \frac{2t(1+t^3) - t^2(3t^2)}{(1+t^3)^2}$			
		$\frac{dy}{dt} = \frac{(2t-t^4)}{(1+t^3)^2}$ oe	A1	1.1	
		$\frac{dy}{dx} = \frac{dy}{dt} \div \frac{dx}{dt} = \frac{2t-t^4}{1-2t^3}$	M1	1.1a	
		$t=1 \Rightarrow \frac{dy}{dx} = -1$	A1	2.1	
		[5]			
8	(ii)	$\text{LHS} = \frac{t^3 + t^6}{(1+t^3)^3}$ oe	M1	1.1a	<b>AG</b> Expression for LHS  Factorising  Completion of argument
		$= \frac{t^3(1+t^3)}{(1+t^3)^3}$	M1	1.1	
		$\text{RHS} = \frac{t^3}{(1+t^3)^2} = \text{LHS}$	A1	2.1	
		[3]			