Question	Answer	Marks	Guidance
5	$\frac{dy}{dx} = 3x^2 + 3x - 2$	**M1**	Allow one error in the coefficient of x^2or x
	Gradient of tangent at $A = -2$ nfww	**A1**	
	Gradient of normal at $A = \frac{1}{2}$	**M1**	**Dep** for an attempt $-1 \div$ *their* gradient – must come from differentiation
	Equation of normal is $y - 1 = \frac{1}{2}x$ oe	**M1**	**Dep** for the normal equation using *their* normal gradient **and** $(0, 1)$
	$1+\frac{1}{2}x = x^3 + \frac{3}{2}x^2 - 2x + 1$	**M1**	**Dep** For solving simultaneously curve with normal **FT** *their* normal equation
	$x(2x^2 + 3x - 5) = 0$ oe nfww	**A1**	
	$[x](x - 1)(2x + 5) = 0$	**M1**	For an attempt solve *their* 3-term quadratic or trying to solve *their* cubic using long division
	$x = 1$ and $x = -\frac{5}{2}$ nfww	**A1**	
6(a)	$\frac{2}{\sqrt{3}}$ or $\frac{2\sqrt{3}}{3}$	**3**	**B2** for $[BM =]\frac{\sqrt{3}a}{2}$ or $\sec^2 30 = 1 + \left(\frac{1}{\sqrt{3}}\right)^2$ or $\cos^2 30 = 1 - \left(\frac{\frac{a}{2}}{a}\right)^2$ oe **B1** for $\left[BM^2 =\right] a^2 - \frac{a^2}{4}$ soi

Question	Answer	Marks	Guidance
6(b)	$\frac{2\sec x}{(\sec x-1)(\sec x+1)}$ soi	**B1**	For adding the two fractions
	$\frac{2\sec x}{(\sec^2 x-1)}$	**B1**	**Dep** on previous **B1** for expanding and simplifying the denominator
	$\frac{2\sec x}{\tan^2 x}$ or $\frac{2}{\tan^2 x\cos x}$	**B1**	**Dep** on previous **B1** for use of $\sec^2 x = 1+\tan^2 x$
	$\frac{2\sec x}{\tan x}\times\cot x$ or $\frac{2\cos x}{\sin^2 x}$ oe or $\frac{2}{\tan x\sin x}$ leading to 2cosec x cot x **AG**	**B1**	**Dep** on previous **B1** with at least one more correct step to get to the given answer
	Alternative method		
	$\frac{1}{\frac{1}{\cos x}-1}+\frac{1}{\frac{1}{\cos x}+1}$ leading to $\frac{\cos x}{1-\cos x}+\frac{\cos x}{1+\cos x}$	**(B1)**	
	$=\frac{\cos x+\cos^2 x+\cos x-\cos^2 x}{1-\cos^2 x}$	**(B1)**	**Dep** on previous **B1** for adding the two fractions
	$=\frac{2\cos x}{\sin^2 x}$	**(B1)**	**Dep** on previous **B1** For use of $\sin^2 x = 1-\cos^2 x$
	= 2cosec $x\times\frac{\cos x}{\sin x}$ oe leading to = 2cosec x cot x **AG**	**(B1)**	**Dep** on previous **B1** with at least one more correct step to get to the given answer
7(a)	$\left[\overrightarrow{OR}=\right]$ $k(-\mathbf{i}+5\mathbf{j})$ or $k\begin{pmatrix}-1\\5\end{pmatrix}$	**B1**	soi
	$\sqrt{1^2+5^2}=\sqrt{26}$	**B1**	For finding the magnitude of $\overrightarrow{PQ}$ allow unsimplified
	$-3\mathbf{i}+15\mathbf{j}$ or $\begin{pmatrix}-3\\15\end{pmatrix}$	**B1**	Allow $3(-\mathbf{i}+5\mathbf{j})$ or $3\begin{pmatrix}-1\\5\end{pmatrix}$ Do notisw