Question	Answer	Marks	Partial Marks
3(a)	$7x^2 + 9x + 5[= 0]$ or $-7x^2 - 9x - 5[= 0]$	**B2**	**B1** for two terms correct in $7x^2 + 9x + 5 = 0$ or at most one term incorrect in $12x^2 + 11x + 2 = 5x^2 + 2x - 3$ oe
	$9^2 - 4(7)(5)$ or $(-9)^2 - 4(-7)(-5)$ oe	**M1**	**FT** *their* 3-term quadratic
	–59 and no real roots or 81 – 140 < 0 and no real roots oe	**A1**	
3(b)	$\left(\sqrt[3]{x}\right)^2 + 4\sqrt[3]{x} - 12 = 0$ oe soi or $y = \sqrt[3]{x}$ and $y^2 + 4y - 12 = 0$ oe soi	**B1**	
	Factorises or solves *their* 3-term quadratic in $\sqrt[3]{x}$	**M1**	**FT** *their* 3-term quadratic in $\sqrt[3]{x}$ or a stated substituted unknown
	$x = 8 \quad x = -216$	**A2**	**A1** for $\sqrt[3]{x} = 2 \quad \sqrt[3]{x} = -6$
4(a)	33	**B1**	
4(b)(i)	$6\left(\frac{1}{2}\right)^3 + \left(\frac{1}{2}\right)^2 - 12\left(\frac{1}{2}\right) + 5 = 0$ oe or $6\left(\frac{1}{8}\right) + \frac{1}{4} - \frac{12}{2} + 5 = 0$ oe or $\frac{3}{4} + \frac{1}{4} - 6 + 5 = 0$ oe	**B1**	
4(b)(ii)	Finds the quadratic factor $3x^2 + 2x - 5$	**M2**	**M1** for any two terms correct in $3x^2 + 2x - 5$
	$(2x - 1)(3x + 5)(x - 1)$ oe	**A1**	If 0 scored then **SC2** for justifying $x - 1$ as a factor and writing down $(2x - 1)(3x + 5)(x - 1)$ without any incorrect work seen
4(b)(iii)	$[\sin\theta = 0.5]$ $\theta = 30$ nfww $[\sin\theta = 1]$ $\theta = 90$ nfww and no value of θ from $3\sin\theta + 5 = 0$	**B2**	**B1** for $\sin\theta = 0.5$ or $\theta = 30$ or **B1** for $\sin\theta = 1$ nfww or $\theta = 90$ nfww

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5	$\frac{dy}{dx} = 10e^{2x-1}$ [+0] oe	**M2**	**M1** for $\frac{dy}{dx} = ke^{2x-1}$, $k \neq 10$ or **SCM1** for $\frac{dy}{dx} = 10e^{2x-1} + c$ where c is algebraic or numerical
	$\left.\frac{dy}{dx}\right\|_{x=1} = 10e$ and $y = 6e$	**A1**	**FT** *their* $\frac{dy}{dx}$ provided **M1** or **SCM1** awarded and a value is found
	$y - 6e = 10e(x-1)$ oe or $y = 10ex + c$ and $6e = 10e + c$	**M1**	**FT** *their* $\left.\frac{dy}{dx}\right\|_{x=1}$ and *their y*
	$y = 10ex - 4e$ isw	**A1**	
	[x-coordinate of P =] 0.4 oe, isw	**A1**	**dep** on correct equation of tangent with exact values
6(a)	Convincing correct statement from which the answer can be easily determined e.g. $\sin^3 x\left(\frac{1}{\sin x} \times \frac{\sin x}{\cos x}\right)$ oe or $\sin^2 x\left(\sin x \times \frac{1}{\sin x} \times \frac{1}{\cot x}\right)$ oe or $\sin^3 x\left(\frac{1}{\sin x} \div \frac{\cos x}{\sin x}\right) = \sin^3 x\left(\frac{1}{\cos x}\right)$ oe or $\sin^3 x\left(\frac{1}{\sin x} \div \frac{1}{\tan x}\right) = \sin^3 x\left(\frac{1}{\sin x} \times \tan x\right)$ oe	**2**	**M1** for either cosec$x$ correctly written as $\frac{1}{\sin x}$ oe seen in a correct expression or for cot$x$ correctly written as $\frac{\cos x}{\sin x}$ or $\frac{1}{\tan x}$ oe seen in a correct expression e.g. $\sin^3 x(\text{cosec}\, x \times \tan x)$ or $\sin^3 x\left(\text{cosec}\, x \div \frac{\cos x}{\sin x}\right)$ or $\sin^3 x\left(\frac{1}{\sin x} \div \frac{\cos x}{\sin x}\right)$ or $\sin^3 x\left(\frac{1}{\sin x} \div \frac{1}{\tan x}\right)$
	Correct completion to given answer: $\sin^2 x \tan x$	**A1**	