Question	Answer	Marks	Guidance
9(b)	$8 \times 4 \times 3 \times 2 \times 1 \times 7$	**M1**	For either 8×7 or 4! or 24 as part of a product
	1344	**A1**	
10	$\tan(3x + 1.2)\left[= \frac{1}{\sqrt{2}}\right]$ or $\cos^2(3x + 1.2)\left[= \frac{2}{3}\right]$ or $\sin^2(3x + 1.2)\left[= \frac{1}{3}\right]$	**M1**	For an attempt to obtain an equation in $\sin(3x + 1.2)$, $\cos(3x + 1.2)$ or $\tan(3x + 1.2)$
	$x = -1.24, -0.195, 0.852$ or better	**4**	**M1 dep** for a correct attempt to obtain one correct solution **A1** for one correct solution in the range **M1 dep** for an attempt to obtain another solution within the range **A1** for 2 more correct solutions within the range and no extra solutions within the range
11	$\ln(3x+2) - \ln(2x+1) - \ln x$	**2**	**B1** for 1 correct term **B1** for the other two terms correct
	$\ln\frac{(3a+2)}{a(2a+1)} - \ln\frac{5}{3}$ $\ln\frac{3(3a+2)}{5a(2a+1)} = \left[\ln\frac{1}{5}\right]$ or $\ln\frac{(3a+2)}{a(2a+1)} = \ln\frac{1}{3}$	**2**	**M1** for application of limits correctly, **dep** on at least one **B** mark **M1** for application of log laws to obtain a single logarithm, dep on at least one **B** mark
	$a^2 - 4a - 3 = 0$ $a = 2 + \sqrt{7}$	**2**	**M1** for equating to $\ln\frac{1}{5}$ and attempt to solve resulting 3-term quadratic equation, dep on at least one **B** mark **A1** for $2 + \sqrt{7}$ must reject $2 - \sqrt{7}$

Question	Answer	Marks	Guidance
12(a)	$\left(\frac{dy}{dx}=\right)$ $\frac{(x-1)\times\frac{2}{3}\times 6x\left(3x^2-2\right)^{-\frac{1}{3}}-\left(3x^2-2\right)^{\frac{2}{3}}}{(x-1)^2}$ or $\left(\frac{dy}{dx}=\right)$ $(x-1)^{-1}\times\frac{2}{3}\times 6x\left(3x^2-2\right)^{-\frac{1}{3}}-(x-1)^{-2}\left(3x^2-2\right)^{\frac{2}{3}}$	**3**	**B1** for $\frac{2}{3}\times 6x\left(3x^2-2\right)^{-\frac{1}{3}}$ **M1** for differentiation of a quotient or product **A1** for all terms other than $\frac{2}{3}\times 6x\left(3x^2-2\right)^{-\frac{1}{3}}$ correct
	$\frac{\left(3x^2-2\right)^{-\frac{1}{3}}}{(x-1)^2}\left(x^2-4x+2\right)$	**2**	**M1 dep** for attempt to factorise, must be in the form $\frac{\left(3x^2-2\right)^{-\frac{1}{3}}}{(x-1)^2}\left[ax(x-1)-\left(3x^2-2\right)\right]$ **A1** all correct
12(b)	When $x=2, \frac{dy}{dx}=-\frac{2}{\sqrt[3]{10}}$ oe	**M1**	**Dep** on the differentiation **M** mark from part **(a)** For attempt to find the value of *their* $\frac{dy}{dx}$ when $x = 2$
	$-\frac{2}{\sqrt[3]{10}}p$ or $-0.928p$	**A1**	
13(a)	Midpoint (10, –9)	**B1**	
	Gradient of $l = -\frac{5}{3}$	**B1**	
	Equation of l: $y+9=-\frac{5}{3}(x-10)$ oe	**M1**	Must be using *their* perpendicular gradient and *their* mid-point
	$y = –4$	**A1**	