Question	Answer	Marks	Guidance
6	$k(5x+2)^{\frac{3}{5}}$	**M1**	
	$f'(x)=\frac{1}{3}(5x+2)^{\frac{3}{5}} \quad (+c)$	**A1**	Condone omission of c
	$\frac{17}{3}=\frac{1}{3}(32)^{\frac{3}{5}}+c$ oe	**M1**	**Dep** for use of $f'(6)$ and attempt to evaluate c
	$c=3$	**A1**	
	$k(5x+2)^{\frac{8}{5}}$	**M1**	
	$\frac{1}{24}(5x+2)^{\frac{8}{5}}+cx$	**A1**	**FT** on *their c*
	$\frac{26}{3}=\frac{1}{24}(32)^{\frac{8}{5}}+d+((3\times6))$ oe	**M1**	**Dep** for use of $f(6)$ and attempt to evaluate d.
	$[f(x)] =\frac{1}{24}(5x+2)^{\frac{8}{5}}+3x-20$	**A1**	
7(a)(i)	154 440	**B1**	
7(a)(ii)	124 200	**2**	**B1** for ${}^{10}P_5$
	Alternative method		
	124 200	**2**	**B1** for 1 symbol: 75 600 2 symbols: 43 200 3 symbols: 5400
7(b)	$16(n-11)=12(n+1)$ oe	**B2**	**B1** for correct numbers or correct factors must be using combinations
	$n=47$	**B1**	**Dep** on both previous **B** marks Must be the only solution

Question	Answer	Marks	Guidance
8	$A\ (2.5,\ 0)$ soi	**B1**	
	$C\ (4.5,\ 0)$ soi	**B1**	
	$2x^2 + x - 21 = 0$	**M1**	For a correct attempt to find the intersection of the straight line and the curve. Must have attempt to solve the resulting quadratic equation to obtain x = .
	$x = 3,\ \left[-\frac{7}{2}\right]$	**A1**	
	$B\left(3,\ \frac{1}{2}\right)$ soi	**A1**	
	$\int\left(2 - \frac{3}{x-1}\right) \mathrm{d}x = 2x - 3\ln(x-1)$	**B1**	
	e.g. $\left[2x - 3\ln(x-1)\right]_{\frac{5}{2}}^{3} =$ $(6 - 3\ln 2) - \left(5 - 3\ln\frac{3}{2}\right)$	**M1**	**Dep** for application of appropriate limits e.g. $x = their\ \frac{5}{2}$ and $x = their\ 3$ $x = their\ \frac{5}{2}$ and $x = their\ \frac{9}{2}$ $x = their 3$ and $x = their\ \frac{9}{2}$ Integral must be in the form $ax + b\ln(x-1)$
	$1 + 3\ln\frac{3}{4}$ oe	**A1**	
	Area of an appropriate triangle	**B1**	**FT** on $\frac{1}{2} \times their\ \frac{1}{2} \times their\ \frac{3}{2}$ oe $\frac{1}{2} \times their 2 \times their\ \frac{2}{3}$ oe Must be appropriate for *their* method
	Area = $\frac{11}{8} + \ln\frac{27}{64}$	**2**	**B1** for each correct term
9(a)(i)	$\begin{pmatrix}2\\5\end{pmatrix}$	**B1**	
9(a)(ii)	Velocity vector = $\begin{pmatrix}12\\-5\end{pmatrix}$ soi by correct speed	**B1**	
	Speed = 13	**B1**	