Question	Answer	Marks	Guidance
4(a)	$e^y = mx^3 + c$ soi	**B1**	
	Correct method to find m e.g. $\frac{13.5-0.5}{1-7.5}$ or $13 = -6.5m$ OR $m = -2$ soi	**M1**	
	Correct method to find c e.g. $13.5 = their(-2)\ [1] + c$ oe or $0.5 = their(-2)\ (7.5) + c$ oe or $0.5 = 7.5(13.5 - c) + c$ oe OR $c = 15.5$ soi	**M1**	
	$y = \ln\left(15.5 - 2x^3\right)$ mark final answer	**A1**	
4(b)	$x < \sqrt[3]{7.75}$ oe, nfww	**2**	**M1 FT** for $15.5 - 2x^3 > 0$ oe, soi; **FT** $a + bx^3 > 0$ from $y = \ln\left(a + bx^3\right)$
5(a)	665 280	**B1**	
5(b)	30 240	**2**	**M1** for $3 \times 10 \times 9 \times 8 \times 7 \times 2$ oe
5(c)	26 880	**2**	**B1** for a final answer of 13 440 or **M1** for $2 \times 3 \times 4 \times 8 \times 7 \times 5 \times 4$ oe
6	All through this question allow correctly written vectors in **i j** form but, incorrectly written column vectors e.g. $\begin{pmatrix} 10\mathbf{i} \\ -24\mathbf{j} \end{pmatrix}$ do not earn full marks unless the correct form is recovered		
6(a)	$\begin{pmatrix} 10 \\ -24 \end{pmatrix}$ oe, isw	**2**	**B1** for the magnitude of the direction vector is 13 soi or **M1** for $\sqrt{5^2 + (-12)^2}$ oe or **M1** for $\begin{pmatrix} 26\cos 1.18 \\ -26\sin 1.18 \end{pmatrix}$ oe
6(b)	$\begin{pmatrix} 3 \\ 6 \end{pmatrix} + t\begin{pmatrix} 10 \\ -24 \end{pmatrix}$ oe, isw	**2**	**M1 FT** for $\begin{pmatrix} 3 \\ 6 \end{pmatrix} + t\left(their\begin{pmatrix} 10 \\ -24 \end{pmatrix}\right)$ **FT** *their* velocity vector

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