	Give 1 mark for each •	Illustration(s) for awarding each mark
1	**C**	
2	**B**	**Award 2 marks for each correct answer**
3	**C**	
4	**A**	**10 marks**
5	**D**	

6(a)	**ans: – 10**	**(4 marks)**	
	•¹ finds $\overrightarrow{AB}$		•¹ $\overrightarrow{AB} = \begin{pmatrix} 2 \\ -4 \\ -5 \end{pmatrix}$
	•² finds $\overrightarrow{BC}$		•² $\overrightarrow{BC} = \begin{pmatrix} 4 \\ y+2 \\ -10 \end{pmatrix}$
	•³ knows how to find y		•³ $y + 2 = -8$
	•⁴ answer		•⁴ $y = -10$
(b)	**ans: (4, – 6 , – 7)**	**(3 marks)**	
	•¹ knows to use section formula		•¹ evidence
	•² uses section formula correctly		•² $\frac{1}{3}\begin{pmatrix} 12 \\ -18 \\ -21 \end{pmatrix}$
	•³ states coordinates of D		•³ $(4, -6, -7)$
7	**ans: 0**	**(3 marks)**	
	•¹ integrates correctly		•¹ $\frac{(2x-3)^4}{4} \times \frac{1}{2} = \frac{(2x-3)^4}{8}$
	•² substitutes values		•² $(\frac{[2(2)-3]^4}{8}) - (\frac{[2(1)-3]^4}{8})$
	•³ answer		•³ $\frac{1^4}{8} - (\frac{(-1)^4}{8}) = 0$

	Give 1 mark for each ●	Illustration(s) for awarding each mark
8	**ans:** $x = 2$ **(3 marks)**	
	●¹ takes power up	●¹ $\log x^3 \ldots\ldots$
	●² simplifies LHS	●² $\log 0\cdot75x^3 \ldots\ldots$
	●³ drops logs from both sides and solves	●³ $0\cdot75x^3 = 6$; $x = 2$
9	**ans:** $f(x) = 2\cos4x - 1$ **(4 marks)**	
	●¹ knows to find integral	●¹ $\int -8\sin 4x\ dx$
	●² finds integral including adding C	●² $2\cos 4x + C$
	●³ knows to substitute given values	●³ $2\cos(\dfrac{2\pi}{3}) + C = -2$
	●⁴ finds value of C and states $f(x)$	●⁴ $2\times(-\dfrac{1}{2}) + C = -2$; $C = -1$; $f(x) = 2\cos 4x - 1$
10	**ans:** 60° **(3 marks)**	
	●¹ multiplies out brackets	●¹ $\mathbf{a}\cdot\mathbf{a} + \mathbf{a}\cdot\mathbf{b}$
	●² substitutes values	●² $4^2 + 4\times5\times\cos\theta = 26$
	●³ finds values for $\cos\theta$ and finds θ	●³ $\cos\theta = \dfrac{1}{2}$; $\theta = 60°$
11(a)	**ans:** $2\cos(2x - \dfrac{\partial}{6})°$ **(4 marks)**	
	●¹ finds value of k	●¹ $k^2 = (\sqrt{3})^2 + 1^2$; $k = 2$
	●² finds ratio for tan _	●² $\tan\alpha = \dfrac{1}{\sqrt{3}}$
	●³ correct quadrant and value for _	●³ quadrant I and $_ = \dfrac{\pi}{6}$
	●⁴ writes in correct form	●⁴ $2\cos(2x - \dfrac{\partial}{6})°$
(b)	**ans:** $\dfrac{\partial}{6}$ **(2 marks)**	
	●¹ realises to use above answer	●¹ $2\cos(2x - \dfrac{\pi}{6})° = \sqrt{3}$
	●² solves for x	●² $\cos(2x - \dfrac{\pi}{6})° = \dfrac{\sqrt{3}}{2}$; $2x - \dfrac{\pi}{6} = \dfrac{\pi}{6}$ $2x = \dfrac{\pi}{3}$; $x = \dfrac{\pi}{6}$