Question	Answer	Marks	Partial Marks
1	$4x + 9 = 6 - 5x$ oe or $4x + 9 = 5x - 6$ oe	**M1**	
	$x = -\frac{1}{3}$, $x = 15$ mark final answer	**A2**	not from wrong working; no extras **A1** for $x = 15$ ignoring extras implies M1 if no extras seen If M0 then **SC1** for any correct value with at most one extra value
	Alternative method: **M1** for $(4x + 9)^2 = (6 - 5x)^2$ oe soi		
	A1 for $9x^2 - 132x - 45 = 0$ oe		
	A1 for $x = -\frac{1}{3}$, $x = 15$ only; mark final answer		
2	Uses $b^2 - 4ac$ with at most one error in substitution: $(-3(k+1))^2 - 4(k)(25) * 0$	**M1**	
	$9k^2 - 82k + 9 * 0$	**A1**	
	Factorises or solves *their* 3-term quadratic	**M1**	
	$k = \frac{1}{9}$ or 9; mark final answer	**A1**	
3(a)	$a = 2$, $b = 1$, $c = -1$	**B2**	**B1** for any two correct
3(b)	Finds three correct critical values: −1.5 to −1.4 inclusive −0.4 0.8 to 0.9 inclusive	**B1**	
	A correct pair of inequalities	**B2**	**B1** for either inequality correct

Question	Answer	Marks	Partial Marks
4	Correctly eliminates one unknown: $\frac{4}{(-2y)^2}+\frac{5}{4y^2}=1$ or $\frac{4}{x^2}+\frac{5}{4\left(-\frac{x}{2}\right)^2}=1$	**M1**	
	Simplifies and rearranges e.g. : $\frac{4}{4y^2}+\frac{5}{4y^2}=1 \rightarrow 4+5=4y^2$ or $\frac{4}{x^2}+\frac{5}{x^2}=1 \rightarrow 4+5=x^2$	**M1**	**FT** omitted brackets; condone one slip
	$y=\pm\frac{3}{2}$ and $x=\pm3$ oe	**A2**	**A1** for $y=\pm\frac{3}{2}$ or $x=\pm3$
	$\sqrt{(3--3)^2+(1.5--1.5)^2}$	**M1**	**FT** *their* $y=\pm\frac{3}{2}$ and $x=\pm3$ provided that no FT coordinate is 0
	$\sqrt{45}$ or $3\sqrt{5}$ indicated as final answer	**A1**	
5(a)	$\left[\frac{\mathrm{d}(x^3)}{\mathrm{d}x}=\right]3x^2$ and $x=\sqrt[3]{512}$ soi OR $\left[\frac{\mathrm{d}(\sqrt[3]{V})}{\mathrm{d}V}=\right]\frac{1}{3}V^{-\frac{2}{3}}$	**B1**	
	$\frac{\mathrm{d}x}{\mathrm{d}t}=\frac{\mathrm{d}V}{\mathrm{d}t}\times\frac{\mathrm{d}x}{\mathrm{d}V}$ oe, soi	**B1**	
	$\frac{480}{3(8)^2}$ oe	**M1**	**FT** *their* $\frac{\mathrm{d}V}{\mathrm{d}x}=k(8)^2$ or $\frac{\mathrm{d}x}{\mathrm{d}V}=k(512)^{-\frac{2}{3}}k\neq0$
	2.5 oe	**A1**	
5(b)	$12(8)\times$ *their* 2.5 soi	**M1**	**FT** *their* 8 provided it is not 512
	240	**A1**	**FT** provided at least M1 earned in **(a)**