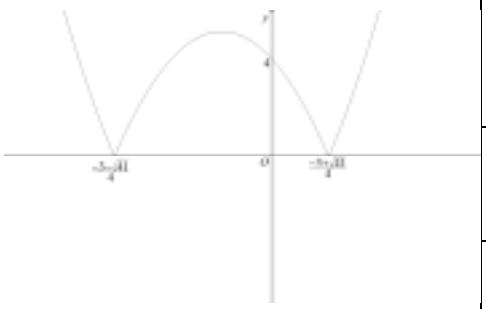
Question	Answer	Marks	Partial Marks
1(a)	$f > 3$	**B1**	Allow y but not x
	$g \in \mathbb{R}$	**B1**	Allow y but not x
1(b)	$\ln(x-3)$	**B1**	
	$\ln(x-3)=9$ $x-3=e^9$	**M1**	For attempt to equate to 9 and solve, must get rid of ln
	$x=e^9+3$	**A1**	
1(c)	$9(9x-5)-5=112$	**M1**	For correct order of operation
	$x=2$	**A1**	
2(a)	Either $2\log_4 y=\log_2 y$ Or $\log_2 x=2\log_4 x$	**B1**	
	Either $\log_2 x+\log_2 y=8$ leading to $\log_2 xy=8$ Or $2\log_4 x+2\log_4 y=8$ leading to $\log_4 xy=4$	**M1**	For use of log law
	$xy=256$	**A1**	
2(b)	$2y^2-3y+1=0$	**B1**	
	$y=\frac{1}{2},\ 1$	**M1**	For attempt to solve for y
	$x=-1$	**A1**	
	$x=0$	**A1**	
3(a)	$v=(2t+1)^{\frac{1}{2}}(+c)$	**B1**	For $v=(2t+1)^{\frac{1}{2}}$ condone absence of c
	$8=1+c,\quad c=7$	**M1**	For attempt to find c must have $k(2t+1)^{\frac{1}{2}}$
	$v=(2t+1)^{\frac{1}{2}}+7$	**A1**	

Question	Answer	Marks	Partial Marks
3(b)	$s=\frac{1}{3}(2t+1)^{\frac{3}{2}}+7t(+d)$	**B1**	For $\frac{1}{3}(2t+1)^{\frac{3}{2}}$
		M1	For attempt to integrate *their* answer to (a), must have $k(2t+1)^{\frac{1}{2}}$ in (a)
	$4=\frac{1}{3}+d$, $d=\frac{11}{3}$	**M1**	Attempt to find d
	$s=\frac{1}{3}(2t+1)^{\frac{3}{2}}+7t+\frac{11}{3}$	**A1**	
4(a)	$2\left(x+\frac{3}{4}\right)^2-\frac{41}{8}$	**B3**	**B1** for 2 **B1** for $\frac{3}{4}$ **B1** for $-\frac{41}{8}$
4(b)	$\left(-\frac{3}{4},\ -\frac{41}{8}\right)$	**B2**	**B1** for $-\frac{3}{4}$ or **FT** on *their* $-b$ **B1** for $-\frac{41}{8}$ or **FT** on *their* c
4(c)		**B1**	For shape with max in 2nd quadrant
		B1	For x-intercepts $\frac{-3\pm\sqrt{41}}{4}$
		B1	For y-intercept of 4 and cusps
4(d)	$\frac{41}{8}$	**B1**	**FT** on *their* c