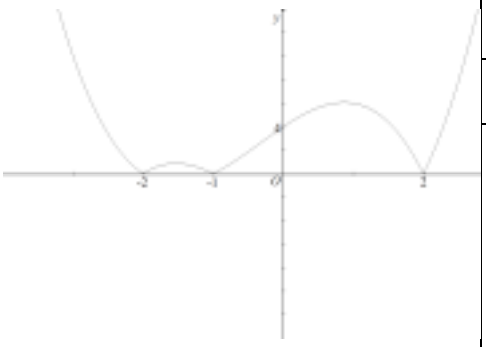
Question	Answer	Marks	Partial Marks
1		**B1**	Shape
		B1	Correct x-coordinates
		B1	Correct y-coordinate and max in first quadrant
2	$\frac{\mathrm{d}r}{\mathrm{d}t} = 0.5$	**B1**	
	$\frac{\mathrm{d}V}{\mathrm{d}r} = 4\pi r^2$	**B1**	
	$\frac{\mathrm{d}V}{\mathrm{d}t} = \frac{\mathrm{d}V}{\mathrm{d}r} \times \frac{\mathrm{d}r}{\mathrm{d}t}$ $\frac{\mathrm{d}V}{\mathrm{d}t} = \pi r^2$	**M1**	For attempt to use a correct form of the chain rule
	When $r = \frac{1}{4}$, $\frac{\mathrm{d}V}{\mathrm{d}t} = 0.125\pi$	**A1**	
3(a)	$4096 - 384x + 15x^2$	**B1**	For 4096
		B1	For $-384x$
		B1	For $15x^2$
3(b)	$(4096 - 384x + 15x^2)\left(x^2 - 2 + \frac{1}{x^2}\right)$	**B1**	For $\left(x^2 - 2 + \frac{1}{x^2}\right)$
	Term independent of x : $-2(4096) + 15$	**M1**	For use of 2 appropriate terms
	–8177	**A1**	
4(a)(i)	720	**B1**	
4(a)(ii)	600	**B1**	**FT** on *their* (i) $\times \frac{5}{6}$