Question Number	Scheme	Marks	Notes
6a	Moments about the y-axis	M1	Use of $\int xy\mathrm{d}x$. Limits not needed. Powers going up by 1
	$\int_{-2}^{4}\frac{1}{4}x^3+2x\,\mathrm{d}x=\left[\frac{1}{16}x^4+x^2\right]_{-2}^{4}$	A1	Correct integration and correct limits seen
	$\bar{x}=\frac{\left[\frac{1}{16}x^4+x^2\right]_{-2}^{4}}{18}$	M1	Use of $\bar{x}=\frac{\int xy\,\mathrm{d}x}{18}$
	$=\frac{27}{18}=\frac{3}{2}$ *	A1*	Obtain given answer from correct working
		(4)	
6b	Moments about the x axis	M1	$\int\frac{1}{2}y^2\mathrm{d}x=\frac{1}{2}\int\frac{x^4}{16}+x^2+4\,\mathrm{d}x$ Correct squaring. Powers going up by 1. Condone if the half is missing.
	$\frac{1}{2}\left[\frac{x^5}{80}+\frac{x^3}{3}+4x\right]_{-2}^{4}$	A1	Correct integration and correct limits seen or implied
	$\bar{y}=\frac{\frac{1}{2}\left[\frac{x^5}{80}+\frac{x^3}{3}+4x\right]_{-2}^{4}}{18}$	M1	Use of $\bar{y}=\frac{\frac{1}{2}\int y^2\,\mathrm{d}x}{18}$
	$\bar{y}=\frac{153}{5\times18}=\frac{17}{10}$ *	A1*	Obtain given answer from correct working
		(4)	
6c	Correct use of trig to find tangent of a relevant angle	M1	e.g. $\tan\theta=\frac{4-\frac{3}{2}}{6-\frac{17}{10}}$
	$\tan\theta=\frac{25}{43}$	A1	
		(2)	
		[10]	