Question	Scheme	Marks	AOs
7(a)	$x = \cos\theta + \sin\theta\cos\theta = -y\cos\theta$	M1	2.1
	$\sin\theta = -y - 1$	M1	2.1
	$\left(\dfrac{x}{-y}\right)^2 = 1 - (-y-1)^2$	M1	2.1
	$x^2 = -\left(y^4 + 2y^3\right)$ *	A1*	1.1b
		(4)	
(b)	$V = \pi\displaystyle\int x^2\,dy = \pi\int -\left(y^4 + 2y^3\right)\,dy$	M1	3.4
	$= \pi\left[-\left(\dfrac{y^5}{5} + \dfrac{y^4}{2}\right)\right]$	A1	1.1b
	$= -\pi\left[\left(\dfrac{(0)^5}{5} + \dfrac{(0)^4}{2}\right) - \left(\dfrac{(-2)^5}{5} + \dfrac{(-2)^4}{2}\right)\right]$	M1	3.4
	$= 1.6\pi\,\text{cm}^3$ **or** awrt $5.03\ \text{cm}^3$	A1	1.1b
		(4)	
		(8 marks)	

Notes:

(a)
M1: Obtains x in terms of y and $\cos\theta$
M1: Obtains an equation connecting y and $\sin\theta$
M1: Uses Pythagoras to obtain an equation in x and y only
A1*: Obtains printed answer

(b)
M1: Uses the correct volume of revolution formula with the given expression
A1: Correct integration
M1: Correct use of correct limits
A1: Correct volume