

# Trig graphs

## Q1

(i) Sketch the graph of  $y = \sec x$  for  $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$  [2]

(ii) A wooden plinth for a statue can be modelled by the volume generated when the area bounded by the curve  $y = \sec x$ , the  $x$ -axis, the  $y$ -axis and the line  $x = a$   $\left(0 < a < \frac{\pi}{2}\right)$  is rotated through  $2\pi$  radians about the  $x$ -axis.

(a) Find an expression for  $V$ , the volume of the plinth. [5]

(b) Find  $V$  if  $a = \frac{\pi}{4}$  [1]

## Q2

Sketch the graph of

$$y = \operatorname{cosec} x \quad \text{for } -\pi < x < \pi$$

[3]

### Q3

(i) Sketch the graph of  $y = \cos x$  where  $0 \leq x \leq \pi$  [2]

(ii) Hence sketch the graph of  $y = \cos^{-1}x$  where  $0 \leq y \leq \pi$  [3]

## Q4

Sketch the graph of

$$y = \cot x \quad \text{for } -180^\circ \leq x \leq 180^\circ$$

[2]

## Q5

(i) Sketch the graph of  $y = \sin x$  for  $0^\circ \leq x \leq 360^\circ$  [2]

(ii) Hence sketch the graph of  $y = \operatorname{cosec} x$  for  $0^\circ \leq x \leq 360^\circ$  [3]

## Q6

Sketch the graph of

$$y = \sin^{-1} x$$

State the restricted domain of this function.

[3]