

TRIGONOMETRY

- 1** $f(x) \equiv \sin x, x \in \mathbb{R}, -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$.
- State the range of f .
 - Define the inverse function $f^{-1}(x)$ and state its domain.
 - Sketch on the same diagram the graphs of $y = f(x)$ and $y = f^{-1}(x)$.
- 2** Find, in radians in terms of π , the value of
- $\arcsin 0$
 - $\arcsin \frac{1}{\sqrt{2}}$
 - $\arcsin (-1)$
 - $\arcsin \left(-\frac{\sqrt{3}}{2}\right)$
- 3** $g(x) \equiv \cos x, x \in \mathbb{R}, 0 \leq x \leq \pi$.
- Define the inverse function $g^{-1}(x)$ and state its domain.
 - Sketch on the same diagram the graphs of $y = g(x)$ and $y = g^{-1}(x)$.
- 4** $h(x) \equiv \tan x, x \in \mathbb{R}, -\frac{\pi}{2} < x < \frac{\pi}{2}$.
- Define the inverse function $h^{-1}(x)$ and state its domain.
 - Sketch on the same diagram the graphs of $y = h(x)$ and $y = h^{-1}(x)$.
- 5** Find, in radians in terms of π , the value of
- $\arccos 1$
 - $\arctan \sqrt{3}$
 - $\arccos \frac{\sqrt{3}}{2}$
 - $\arcsin \left(-\frac{1}{2}\right)$
 - $\arctan (-1)$
 - $\arccos (-1)$
 - $\arctan \left(-\frac{1}{\sqrt{3}}\right)$
 - $\arccos \left(-\frac{1}{\sqrt{2}}\right)$
- 6** Find, in radians to 2 decimal places, the value of
- $\arcsin 0.6$
 - $\arccos 0.152$
 - $\arctan 4.7$
 - $\arcsin (-0.38)$
 - $\arccos 0.92$
 - $\arctan (-0.46)$
 - $\arcsin (-0.506)$
 - $\arccos (-0.75)$
- 7** Solve
- $\arcsin x = \frac{\pi}{4}$
 - $\arccos x = 0$
 - $\arctan x = -\frac{\pi}{3}$
 - $\arccos 2x = \frac{\pi}{6}$
 - $\frac{\pi}{4} - \arctan x = 0$
 - $6 \arcsin x + \pi = 0$
- 8** Solve each equation, giving your answers to 3 significant figures.
- $\arccos x = 2$
 - $\arcsin x = -0.7$
 - $\arctan 3x = 0.96$
 - $1 - \arcsin x = 0$
 - $2 + 3 \arctan x = 0$
 - $3 - \arccos 2x = 0$
- 9** $f(x) \equiv \arccos x - \frac{\pi}{3}, x \in \mathbb{R}, -1 \leq x \leq 1$.
- State the value of $f\left(-\frac{1}{2}\right)$ in terms of π .
 - Solve the equation $f(x) = 0$.
 - Define the inverse function $f^{-1}(x)$ and state its domain.