

Radians, arcs, sectors and trigonometry

1. Express in radians (a) 360° (b) 270° (c) 135°
2. Express in degrees (a) $\frac{\pi}{3}$ (b) $\frac{5\pi}{4}$ (c) $\frac{5\pi}{6}$
3. Find the **arc length** and **area** of a sector subtending an angle of :
 - (a) 210° with radius of 12cm (b) $\frac{3\pi}{4}$ radians with radius of 9cm
4. Sketch the graphs for $0 \leq x \leq 360^\circ$
 - (a) $y = (\sin x) - 2$ (b) $y = \tan(x - 45^\circ)$ (c) $y = -\cos x$
5. Without a sketch, describe fully how the graph $y = \cos x$ is transformation to produce the graph $y = 2 \cos\left(x - \frac{\pi}{6}\right)$.
6. Solve the following equations in the range $0 \leq x \leq 360^\circ$
 - (a) $\sin x = 0.8$ (b) $\cos x = 0.4$ (c) $\tan x = -2.5$
7. Find the values of x in the interval $0 \leq x \leq 360^\circ$ such that
 - (a) $\sin 2x = 0.3$ (b) $\cos 2x = -0.5$
8. Solve the equation

$$\cos(x - 10^\circ) = \frac{1}{2} \quad \text{in the range } -180^\circ \leq x \leq 180^\circ$$