1 Given that $\sin\theta = \frac{\sqrt{3}}{4}$, find in surd form the possible values of $\cos\theta$. [3]

2 **(i)** Show that the equation $\frac{\tan\theta}{\cos\theta} = 1$ may be rewritten as $\sin\theta = 1 - \sin^2\theta$. **[2]**

(ii) Hence solve the equation $\frac{\tan\theta}{\cos\theta} = 1$ for $0° \leqslant \theta \leqslant 360°$. **[3]**

3 Show that the equation $4\cos^2\theta = 1 + \sin\theta$ can be expressed as

$$4\sin^2\theta + \sin\theta - 3 = 0.$$

Hence solve the equation for $0° \leqslant \theta \leqslant 360°$. **[5]**

4 Showing your method clearly, solve the equation

$$5\sin^2\theta = 5 + \cos\theta \qquad \text{for } 0° \leqslant \theta \leqslant 360°.$$ **[5]**

5 You are given that $\sin\theta = \frac{\sqrt{2}}{3}$ and that θ is an acute angle. Find the **exact** value of $\tan\theta$. **[3]**

6 Solve the equation $\sin 2x = -0.5$ for $0° < x < 180°$. **[3]**

7 You are given that $\tan\theta = \frac{1}{2}$ and the angle θ is acute. Show, without using a calculator, that $\cos^2\theta = \frac{4}{5}$. [3]

8 Given that $\cos\theta = \frac{1}{3}$ and θ is acute, find the exact value of $\tan\theta$. [3]

9

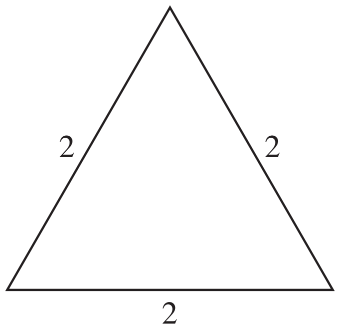

Fig. 3

Beginning with the triangle shown in Fig. 3, prove that $\sin 60° = \frac{\sqrt{3}}{2}$. [3]

10 **(i)** Sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 360°$.

On the same axes, sketch the graph of $y = \cos 2x$ for $0° \leqslant x \leqslant 360°$. Label each graph clearly. [3]

(ii) Solve the equation $\cos 2x = 0.5$ for $0° \leqslant x \leqslant 360°$. [2]

11 **(i)** Solve the equation $\cos x = 0.4$ for $0° \leqslant x \leqslant 360°$.

(ii) Describe the transformation which maps the graph of $y = \cos x$ onto the graph of $y = \cos 2x$. [5]

12 **(i)** Sketch the graph of $y = \tan x$ for $0° \leqslant x \leqslant 360°$. [2]

(ii) Solve the equation $4 \sin x = 3 \cos x$ for $0° \leqslant x \leqslant 360°$. [3]