

- Solve each equation for  $0^\circ \leq \theta \leq 360^\circ$ 
  - $\cos \theta = 0.5$
  - $\sin \theta = -0.5$
  - $\tan \theta = 2$
- Solve each equation for  $0 \leq \theta \leq 2\pi$ 
  - $\cos \theta = \frac{\sqrt{3}}{2}$
  - $\sin \theta = 0.5$
  - $\tan \theta = \sqrt{3}$
- Solve each equation for  $-180^\circ \leq \theta \leq 180^\circ$ 
  - $2\sin \theta = 0.6$
  - $3\cos \theta - 1 = 0$
  - $2\tan \theta + 1 = 0$
  - $-6\sin \theta = 3\cos \theta$
  - $\sin x + \sqrt{2} = -\sin x$
- Solve each equation for  $0 \leq \theta \leq 2\pi$  expressing the answer in terms of  $\pi$ 
  - $\cos^2 \theta = \frac{3}{4}$
  - $3\tan^2 \theta - 1 = 0$
  - $4\sin^2 \theta - 1 = 1$
- Solve each equation for  $0^\circ \leq \theta \leq 360^\circ$ 
  - $\sin 2x = -\frac{1}{2}\sqrt{3}$
  - $\cos \frac{1}{2}x = 0.3$
  - $\tan 3x = 0.5$
- Solve each equation for  $-\pi \leq \theta \leq 2\pi$  expressing
  - $\cos x = -\frac{3}{8}$
  - $\sin 3x = 0.1$
  - $\tan 0.25x = 1.5$
- Find, without using a calculator, the exact values of:
  - $\tan \theta$  and  $\cos \theta$  given that  $\sin \theta = \frac{3}{8}$  and  $\theta$  is obtuse
  - $\sin \theta$  and  $\cos \theta$  given that  $\theta$  is reflex and  $\tan \theta = \sqrt{3}$
- Solve each equation for  $0 \leq \theta \leq 2\pi$  expressing the answer in terms of  $\pi$ 
  - $\cos(2\theta - 20^\circ) = 0.725$
  - $4\sin(1.2^\circ - \theta) = 3$
  - $4\sin^2(\theta + 60^\circ) - 1 = 0$
  - $2\sin 3x - 1 = 0$
  - $3\tan\left(\frac{x}{2}\right) + 3 = 0$
- Simplify the following expressions :
  - $\frac{\tan \theta}{\sin \theta}$
  - $\sin^2 x(1 - \cos^2 x)$
  - $\sqrt{\frac{1 - \cos^2 \theta}{1 - \sin^2 \theta}}$
- Prove the following results
  - $1 + \frac{1}{\tan^2 \theta} \equiv \frac{1}{\sin^2 \theta}$
  - $\frac{2 \sin x \cos x}{1 - \sin^2 x} \equiv 2 \tan x$
  - $(\cos x - \sin x)^2 + 2 \sin x \cos x \equiv 1$
  - $\tan^2 \theta + 1 \equiv \frac{1}{\cos^2 \theta}$
  - $\frac{1 - \cos^2 A}{\cos^2 A} \equiv \tan^2 A$
  - $\tan^2 \theta - \frac{1}{\tan^2 \theta} \equiv \frac{1 - 2\cos^2 \theta}{\cos^2 \theta(1 - \cos^2 \theta)}$
- Solve each equation below for  $0 \leq \theta \leq 360^\circ$ 
  - $2\sin^2(\theta) - 3\cos(\theta) = 3$
  - $2\sin^2(\theta) - \sin(\theta) - 1 = 0$
  - $2\sin 3x - 1 = 0$
- Solve for  $x$  in the interval  $\pi \leq x \leq 2\pi$ ,
$$\frac{1 + \sin x}{\cos x} + \frac{\cos x}{1 + \sin x} = 4$$