

1. Sketch the graphs of $\sin \theta$ and $\cos \theta$, and extend the following table of trigonometric values to $\theta = 2\pi$:

	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
sin	0	$1/2$	$1/\sqrt{2}$	$\sqrt{3}/2$	1
cos	1	$\sqrt{3}/2$	$1/\sqrt{2}$	$1/2$	0
tan	0	$1/\sqrt{3}$	1	$\sqrt{3}$	*

2. Write down the value of θ for each of the following pairs of sines and cosines, and state the quadrant in which each lies:

- (i) $\cos \theta = 1/\sqrt{2}$, $\sin \theta = -1/\sqrt{2}$ (ii) $\cos \theta = -1/\sqrt{2}$, $\sin \theta = 1/\sqrt{2}$
 (iii) $\cos \theta = -1/\sqrt{2}$, $\sin \theta = -1/\sqrt{2}$ (iv) $\cos \theta = \sqrt{3}/2$, $\sin \theta = 1/2$
 (v) $\cos \theta = \sqrt{3}/2$, $\sin \theta = -1/2$ (vi) $\cos \theta = -\sqrt{3}/2$, $\sin \theta = -1/2$.

3. Show that $\tan(\pi/12) = 2 - \sqrt{3}$.

4. Show that $\cos\left(\theta + \frac{\pi}{3}\right) + \sin\left(\theta + \frac{\pi}{6}\right) \equiv \cos \theta$.

5. Solve the equation $\cos 2x - 5\cos x = 2$ in the interval $0 \leq x \leq 2\pi$.

6. Show that $2\cot\left(\frac{x}{2}\right)\left(1 - \cos^2\left(\frac{x}{2}\right)\right) = \sin x$.

7. Show that $\cos 3\theta \equiv 4\cos^3 \theta - 3\cos \theta$.