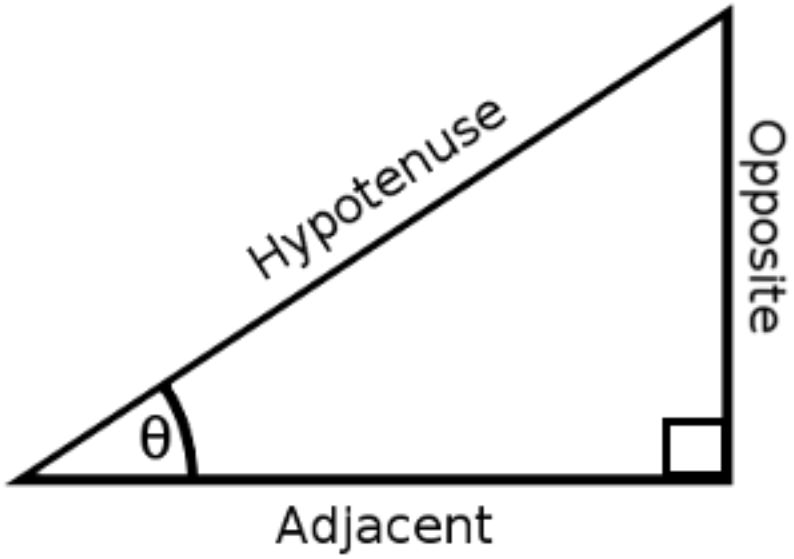
Unit circle



SOH CAH TOA

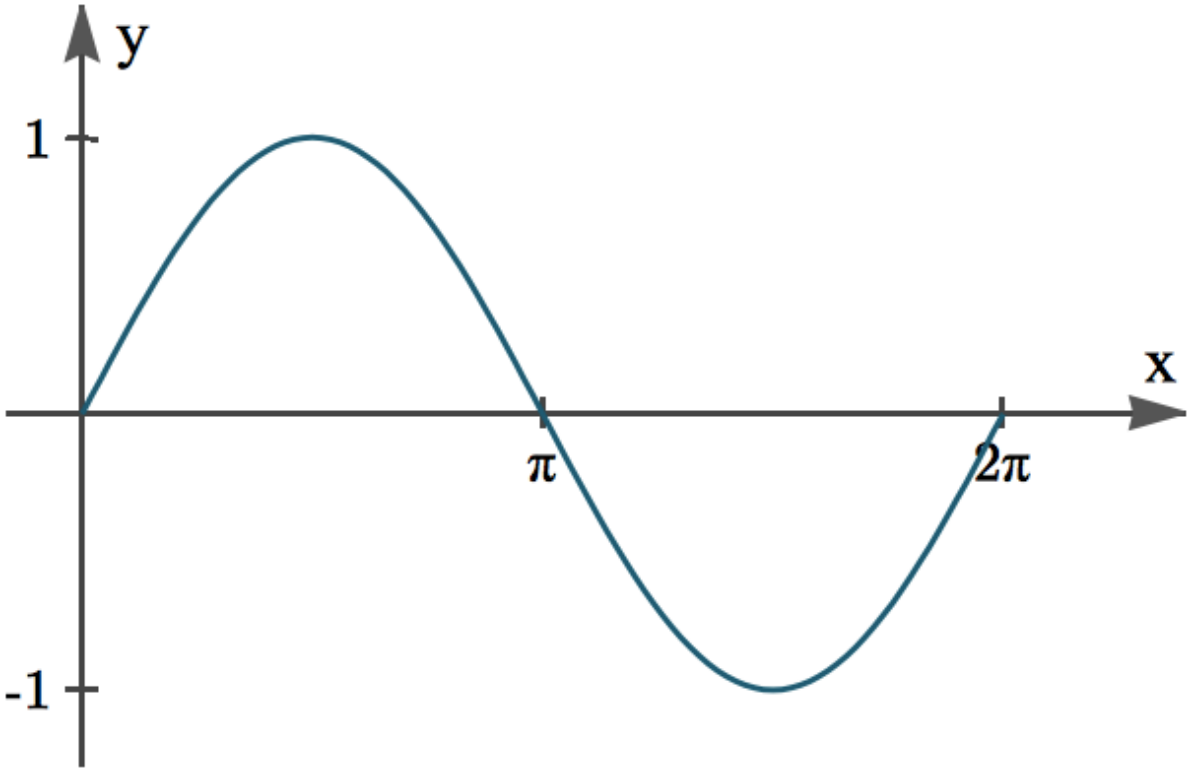
$$\text{Sin } \theta = \frac{\text{Opposite}}{\text{Hypotenuse}} \qquad \text{Cos } \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}} \qquad \text{Tan } \theta = \frac{\text{Opposite}}{\text{Adjacent}} = \frac{\sin\theta}{\cos\theta}$$

$$\boldsymbol{sin^2\, x + cos^2\, x = 1}$$

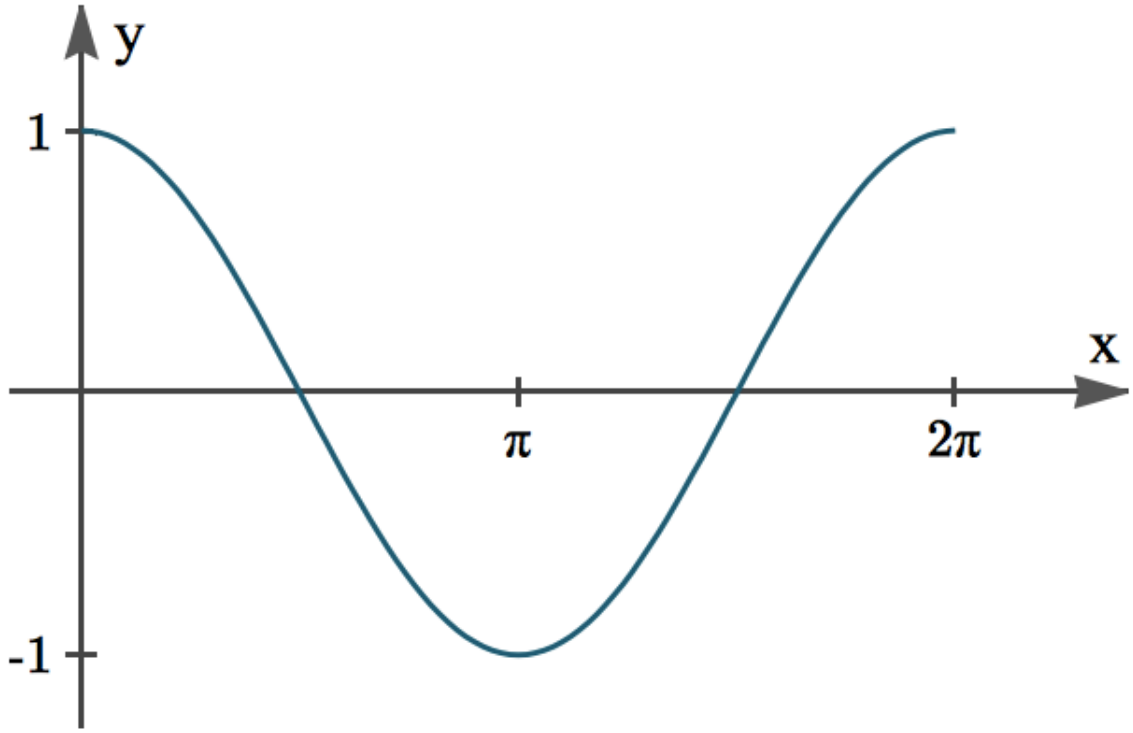
1. Given sin x = $\frac{3}{5}$, find cos x.

2. Given sin x = $-\frac{1}{3}$, find cos x.

Sine graph

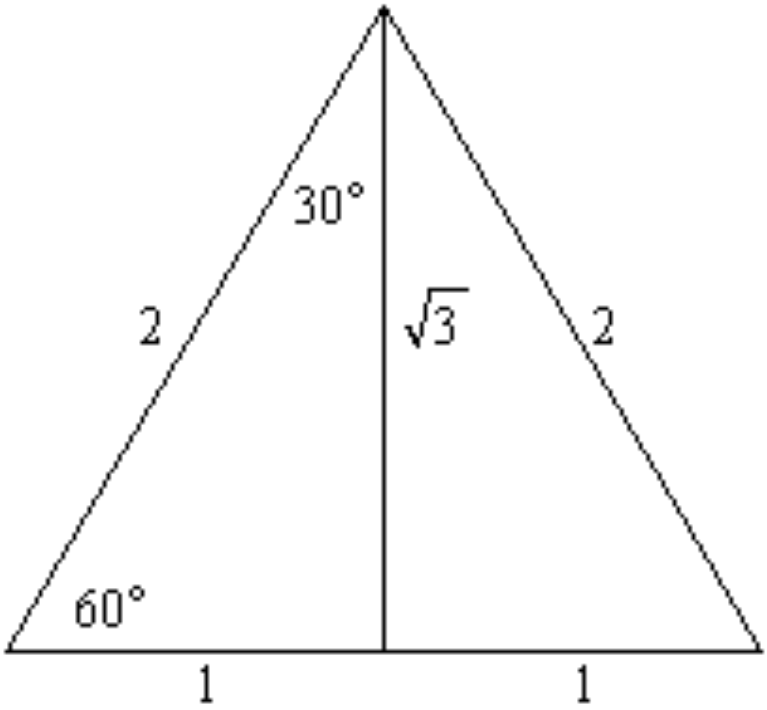


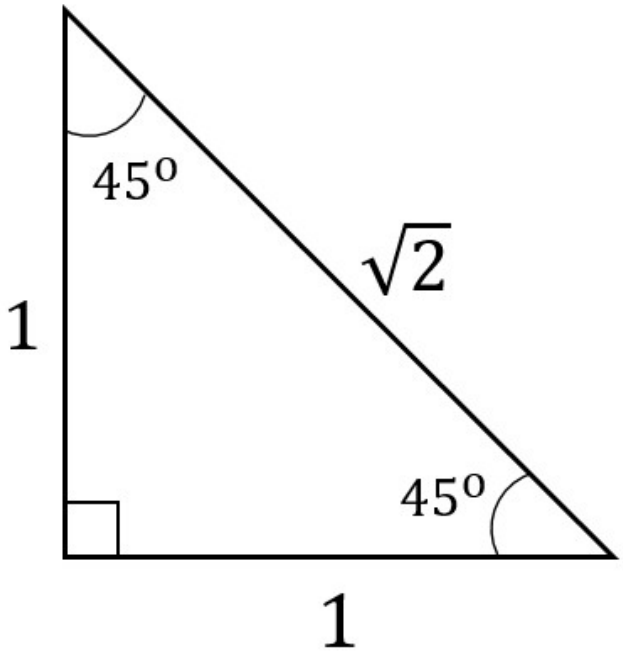
Cosine graph



Special angles

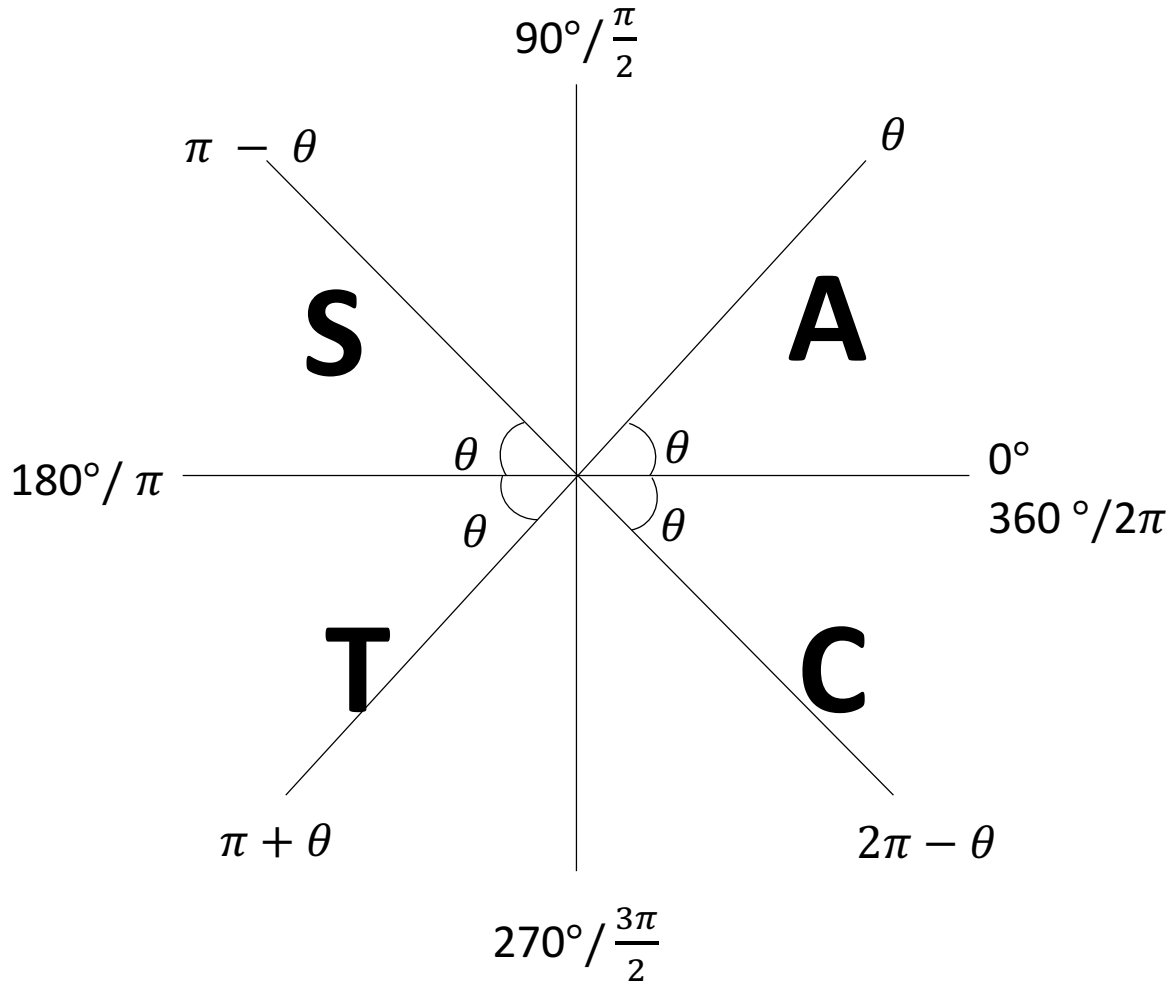
30°, 45° and 60°





Use the special triangles to complete the following table.

θ	$30°/\frac{\pi}{6}$	$45°/\frac{\pi}{4}$	$60°/\frac{\pi}{3}$
sin θ			
cos θ			
tan θ			



1. If $\cos x = \frac{1}{5}$ and $\frac{3\pi}{2} < x < 2\pi$, find $\tan x$ exactly.

2. Given that $\tan x = \frac{2}{3}$ and $0 < x < \frac{\pi}{2}$.
   Find the exact values for $\sin x$ and $\cos x$.

Exercise

Paper 1

1. Let $\sin\theta = \frac{\sqrt{5}}{3}$, where θ is acute.

(a) Find $\cos\theta$.

(b) Find $\cos 2\theta$.

2. Solve $\log_2(2sin\ x) + \log_2(cos\ x) = -1$, for $2\pi < x < \frac{5\pi}{2}$.

3. Solve $2\cos x = \sin 2x$, for $0 \leq x \leq 3\pi$.