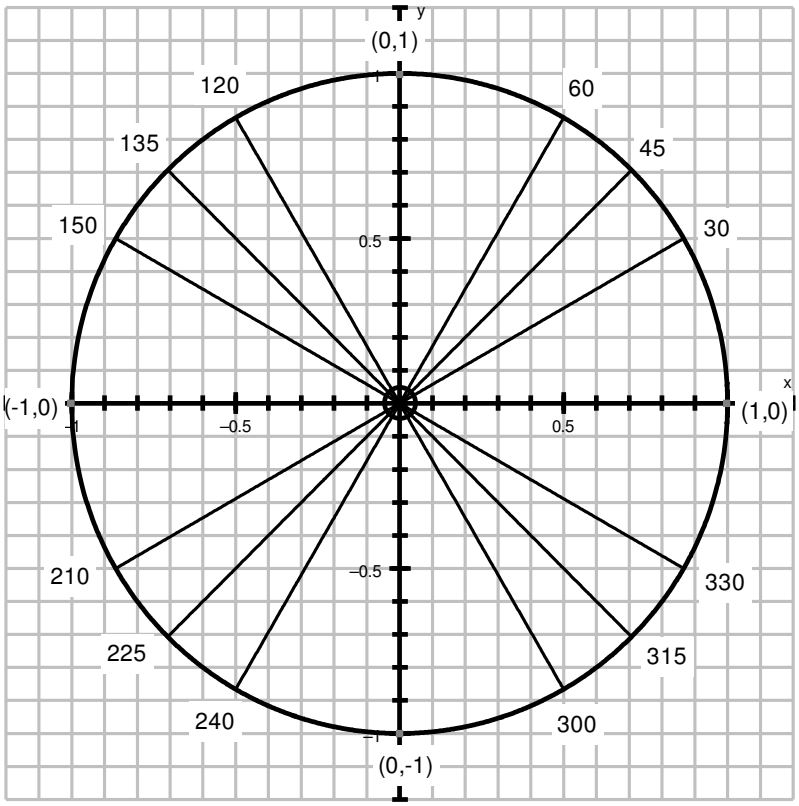
A new function

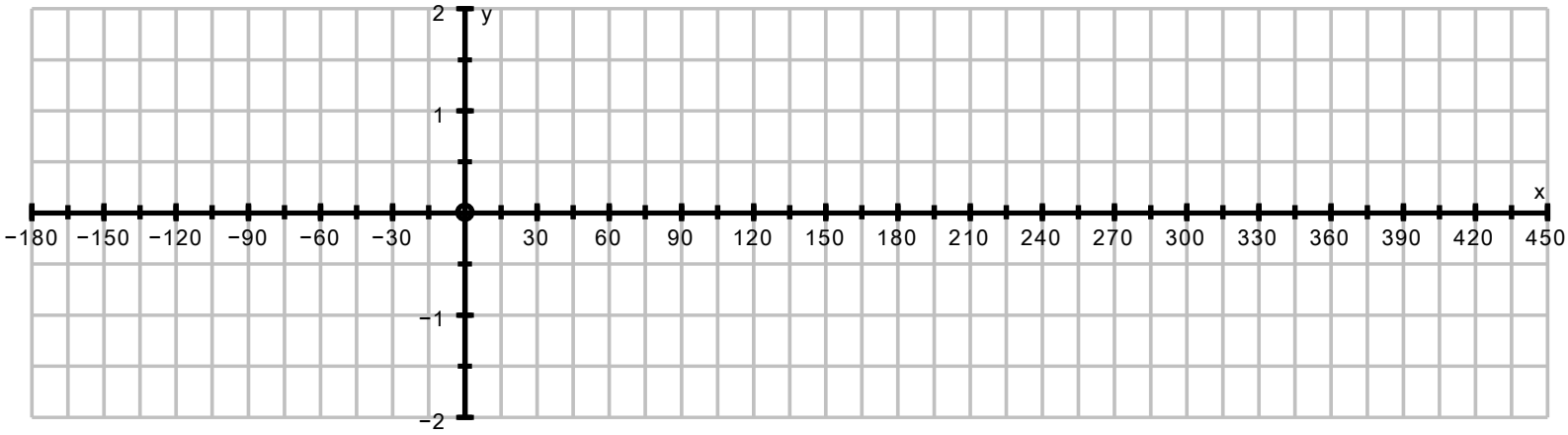
We are going to do some work on a circle, and would like it to be the simplest circle possible. For that reason it should have a radius of 1, and have its centre placed at the origin of a coordinate axis.



We will now examine the relationship between two variables: **angle of rotation** and **height of the point** on this circle.

Angle	0°	30°	45°	60°	90°	120°	135°	150°	180°
Height									
Angle	210°	225°	240°	270°	300°	315°	330°	360°	390°
Height									

Make a graph of your function. Continue the pattern for negative angles.



What is the equation of this new function?

What is the:

Domain: _____ Range: _____

y-intercept: _____ *x*-intercept(s) : _____

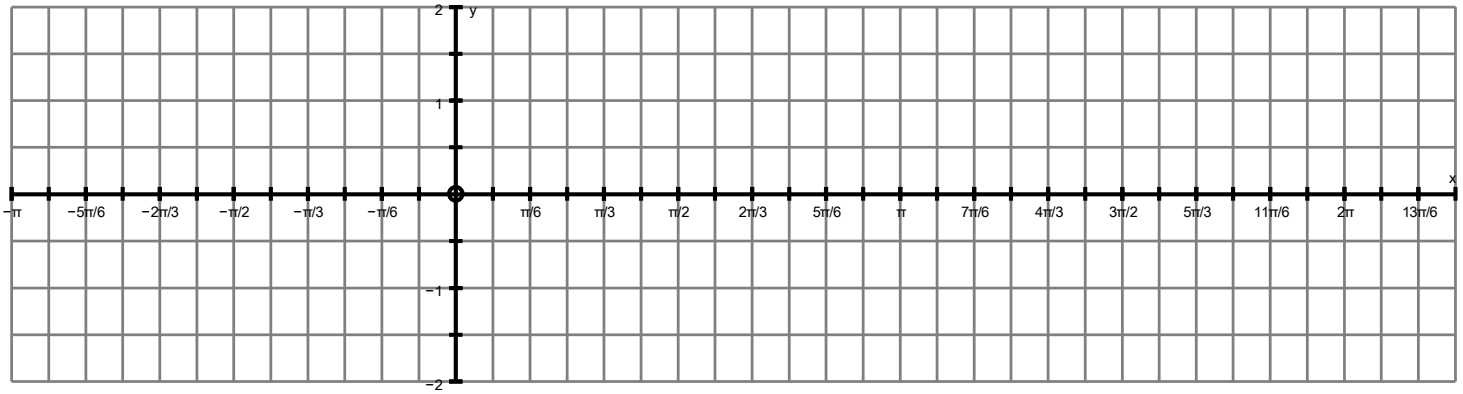
max. value: _____ min. value: _____

amplitude: _____ period: _____

equation of the sinusoidal axis: _____

Draw the graph again, but use radians for the angle measures:

Angle	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π
Height									
Angle	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π	$\frac{13\pi}{6}$
Height									



What is the:

Domain: _____ Range: _____

y-intercept: _____ *x*-intercept(s) : _____

max. value: _____ min. value: _____

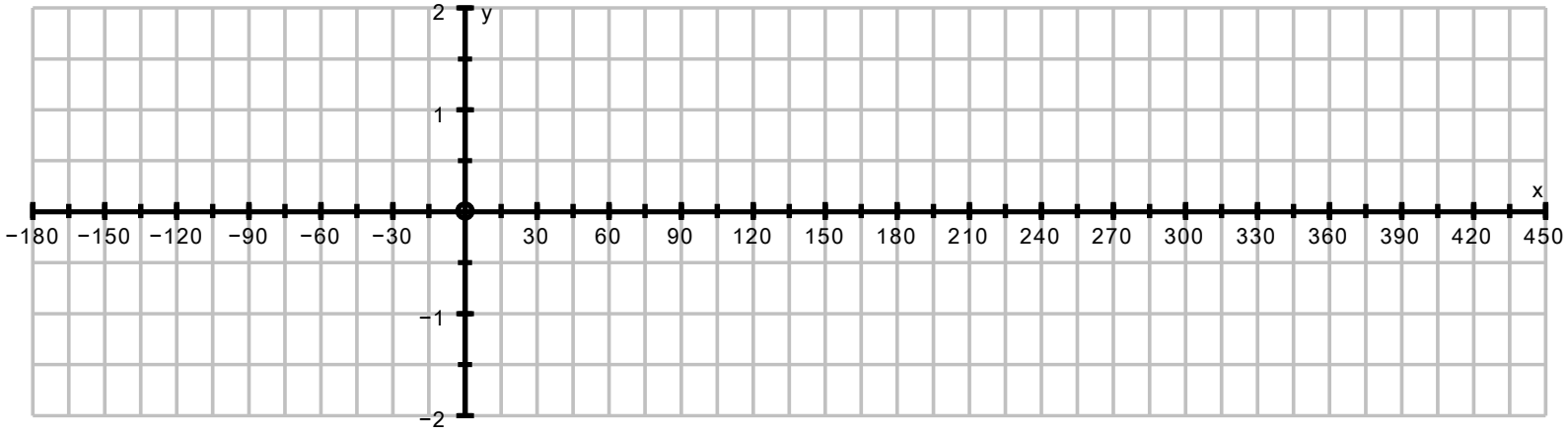
amplitude: _____ period: _____

equation of the sinusoidal axis: _____

Graph $y = \cos x$. Use the unit circle to complete the table of values, using degrees.

Angle (x)	0°	30°	45°	60°	90°	120°	135°	150°	180°
Height $\cos x$									
Angle (x)	210°	225°	240°	270°	300°	315°	330°	360°	390°
Height $\cos x$									

Make a graph of your function. Continue the pattern for negative angles.



What is the:

Domain: _____ Range: _____

y-intercept: _____ x-intercept(s) : _____

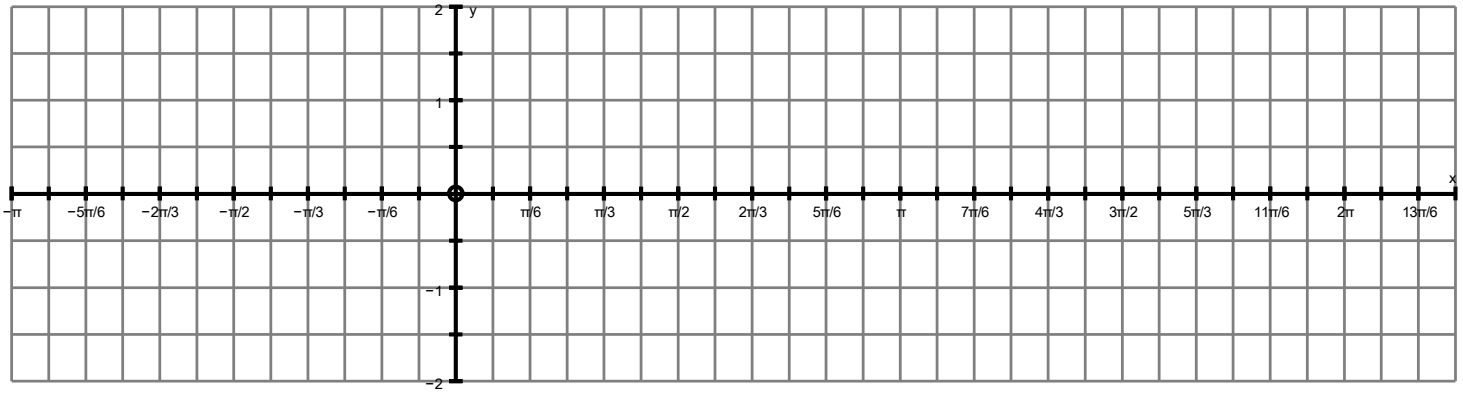
max. value: _____ min. value: _____

amplitude: _____ period: _____

equation of the sinusoidal axis: _____

Graph $y = \cos x$. Use the unit circle to complete the table of values, using radians.

Angle (x)	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π
Height $\cos x$									
Angle (x)	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π	$\frac{13\pi}{6}$
Height $\cos x$									



What is the:

Domain: _____ Range: _____

y-intercept: _____ x-intercept(s) : _____

max. value: _____ min. value: _____

amplitude: _____ period: _____

equation of the sinusoidal axis: _____

COMPARE $y = \sin x$ with $y = \cos x$. How are they the same? How are they different?