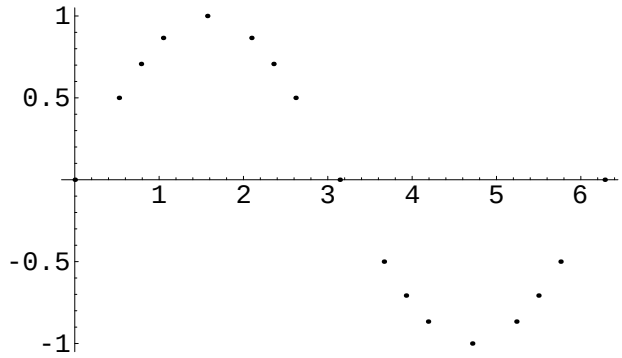
The Graph of Sin(x)

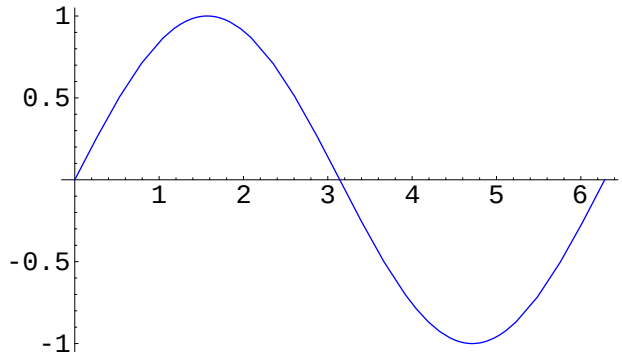
The following table shows the value of $\sin(x)$ for various values of x. (Namely all multiples of 30 degrees and 45 degrees, except we're using radians.) You don't have to memorize these values; you can find all of them using our unit-circle definitions and by fitting a 45-45-90 or 30-60-90 triangle into the circle. We did this during the lecture on section 5.2.

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	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
$y = \sin(x)$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{1}{\sqrt{2}}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{\sqrt{2}}$	$-\frac{1}{2}$	0

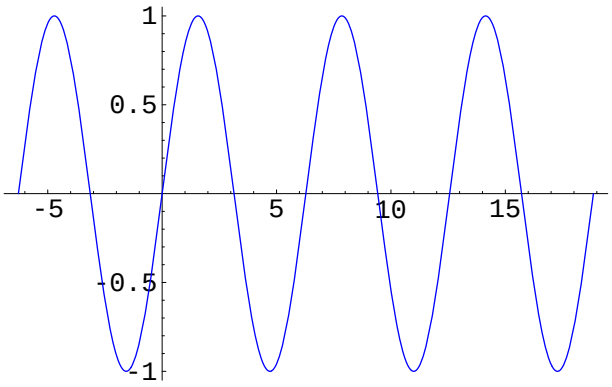
If we plot these points (x, y) they look like this:



If we connect the dots using a smooth curve, we'll get the following graph.



We know that $\sin(x)$ is periodic with period 2π. That means the graph just repeats forever and ever to the left and right.



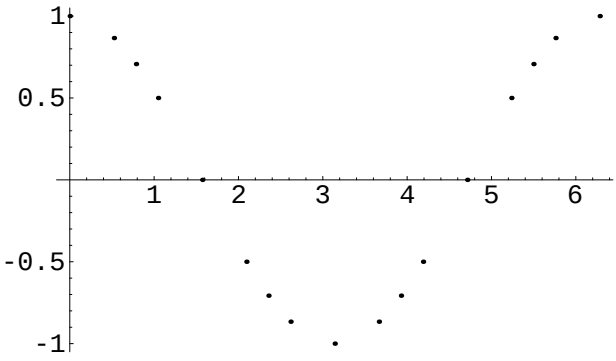
The Graph of Cos(x)

[Note that this section is almost identical to the previous section; all I've done is replaced references to sin(x) with references to cos(x).]

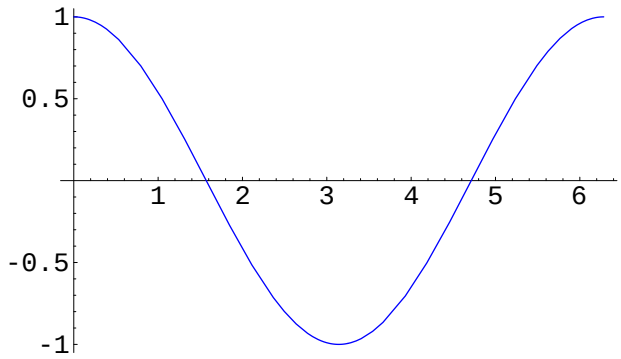
The following table shows the value of cos(x) for various values of x. (Namely all multiples of 30 degrees and 45 degrees, except we're using radians.) You don't have to memorize these values; you can find all of them using our unit-circle definitions and by fitting a 45-45-90 or 30-60-90 triangle into the circle. We did this during the lecture on section 5.2.

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	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
$y = \cos(x)$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{1}{\sqrt{2}}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{\sqrt{2}}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1

If we plot these points (x, y) they look like this:



If we connect the dots using a smooth curve, we'll get the following graph.



We know that $\cos(x)$ is periodic with period 2π. That means the graph just repeats forever and ever to the left and right.