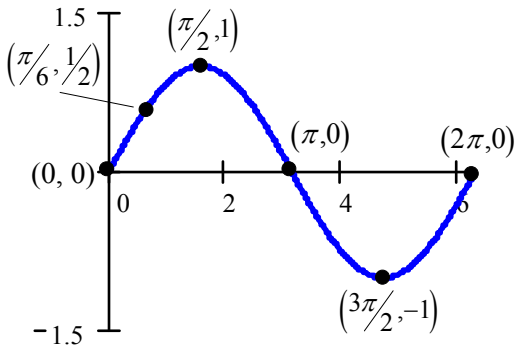
The Graph of $y = \sin x$

x	y
0	0
$\pi/6$	$1/2$
$\pi/3$	$\sqrt{3}/2$
$\pi/2$	1
$5\pi/6$	$1/2$
π	0
$3\pi/2$	-1
2π	0



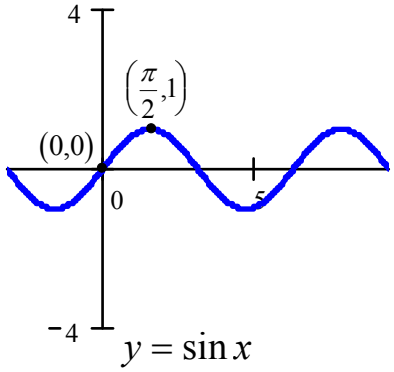
Characteristics of the Sine Function

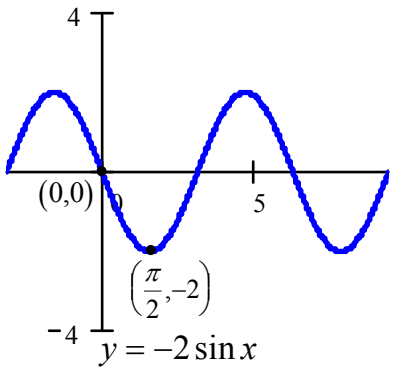
1. The domain is the set of all real numbers.
2. The range consists of all real numbers from -1 to 1, inclusive.
3. The sine function is an odd function (symmetric with respect to the origin).
4. The sine function is periodic, with period 2π.
5. The x-intercepts are $\ldots, -2\pi, -\pi, 0, \pi, 2\pi, \ldots$; the y-intercept is 0.

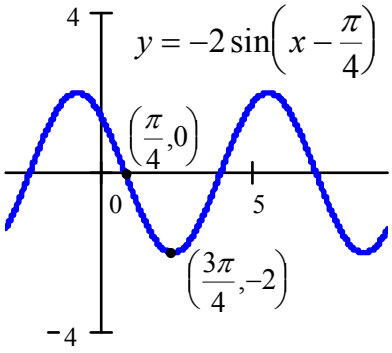
Characteristics of the Sine Function

6. The maximum value is 1 and occurs at $x = \ldots, -3\pi/2, \pi/2, 5\pi/2, \ldots$; the minimum value is -1 and occurs at $x = \ldots -\pi/2, 3\pi/2, 7\pi/2, \ldots$

Use the graph of $y = \sin x$ to graph $y = -2\sin\left(x - \frac{\pi}{4}\right)$.

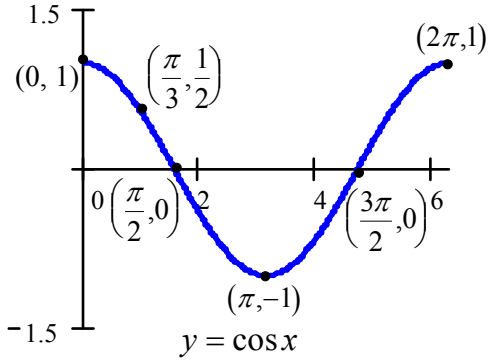






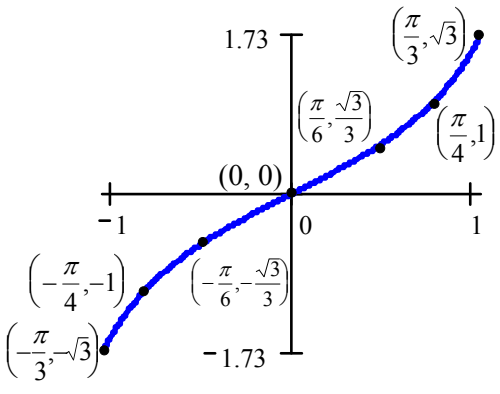
The Graph of $y = \cos x$

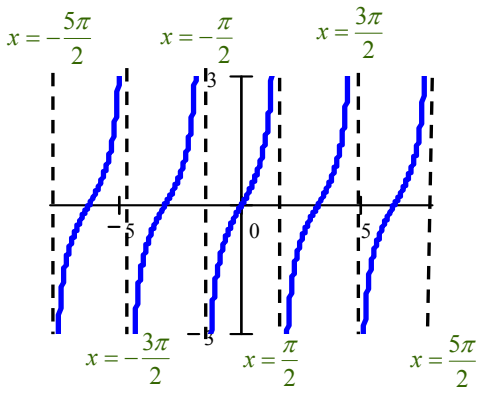
x	y
0	1
$\pi/6$	$\sqrt{3}/2$
$\pi/3$	$1/2$
$\pi/2$	0
$2\pi/3$	$-1/2$
π	-1
$3\pi/2$	0
2π	1



The Graph of $y = \tan x$

x	y
$-\pi/3$	$-\sqrt{3} \approx -1.73$
$-\pi/4$	-1
$-\pi/6$	$-\sqrt{3}/3 \approx -0.58$
0	0
$\pi/6$	$\sqrt{3}/3 \approx 0.58$
$\pi/4$	1
$\pi/3$	$\sqrt{3}$





Characteristics of the Tangent Function

1. The domain is the set of all real numbers, except odd multiples of $\pi/2$.
2. The range consists of all real numbers.
3. The tangent function is an odd function (symmetric with respect to the origin).
4. The tangent function is periodic, with period π.
5. The x-intercepts are …,-2π, $-\pi$, 0, π, 2π,…; the y-intercept is 0.

Characteristics of the Tangent Function

6. Vertical asymptotes occurs at

$x = \ldots, -3\pi/2, -\pi/2, \pi/2, 3\pi/2, \ldots$