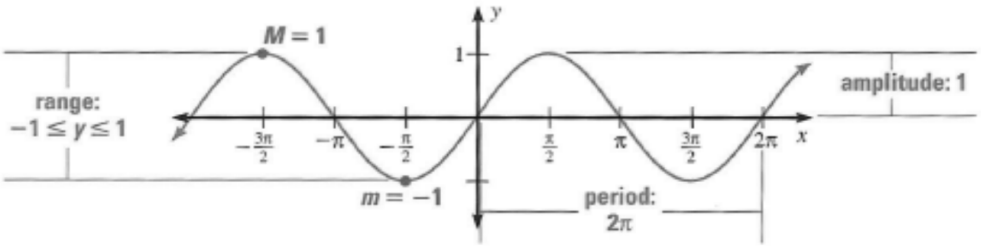
14-1 Graphing Sine, Cosine, and Tangent Functions

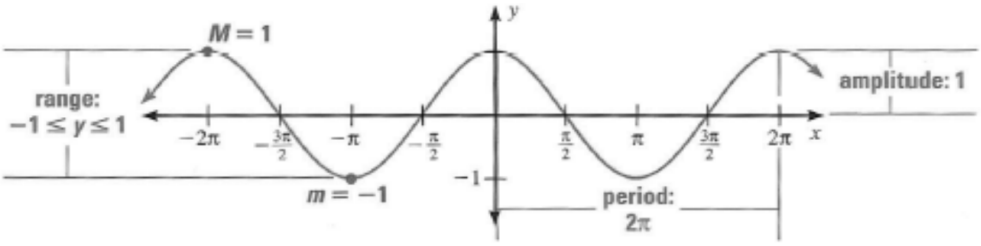
trig. std. 4.0

(unwrapping the circle)

(see page 831)



Graph of $y = \sin x$



Graph of $y = \cos x$

General Forms $y = a \sin bx$ $y = a \cos bx$

$\text{period} = \dfrac{2\pi}{|b|}$ amplitude $|a|$ range $-a \le y \le a$

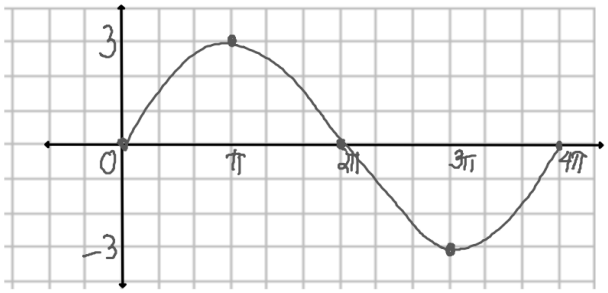
---

ex. 1 $y = 3 \sin \frac{1}{2} x$ (a = 3, b = $\frac{1}{2}$)

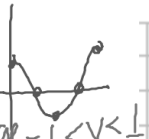
amp = 3

range $-3 \le y \le 3$

period = $\frac{2\pi}{1/2} = 4\pi$

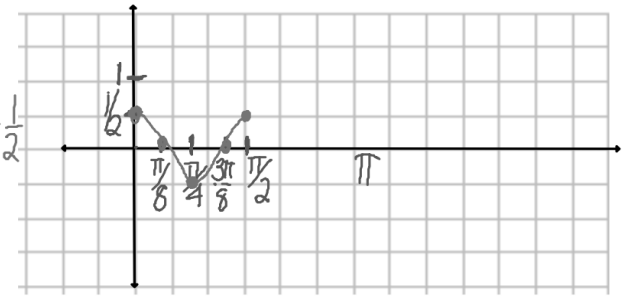


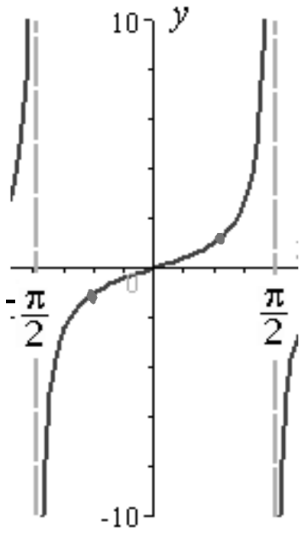
ex. 2 $y = \frac{1}{2} \cos 4x$ (a = $\frac{1}{2}$, b = 4)



amp = $1/2$ range $-\frac{1}{2} \le y \le \frac{1}{2}$

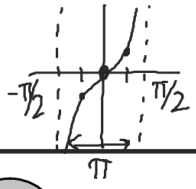
period = $\frac{2\pi}{4} = \pi/2$





$y = \tan x$

General Form $y = a \tan bx$



period $= \frac{\pi}{|b|}$

range: all real numbers

$\pm a$: 2nd and 4th key values

ex. 3 $y = 3 \tan \frac{1}{4} x$

period $\frac{\pi}{1/4} = 4\pi$

$\pm a = \pm 3$