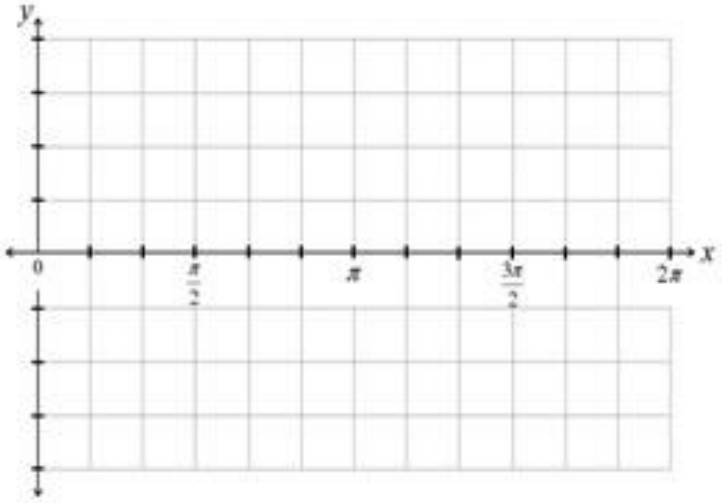
Graphing Trigonometry Functions

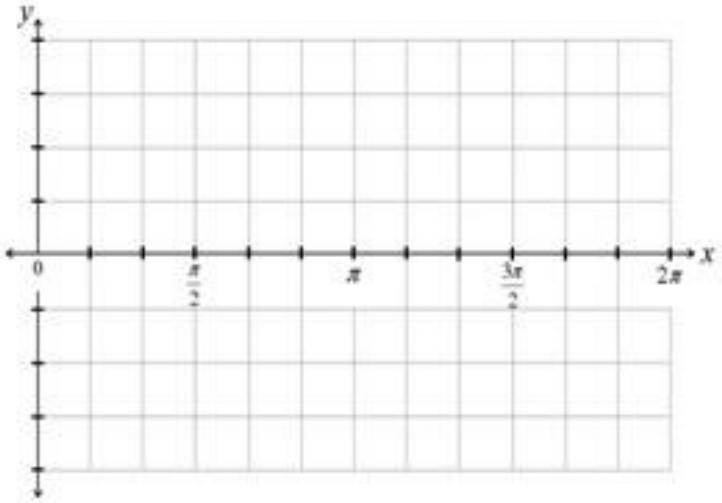
Properties of Sine and Cosine Functions

- $y = a\sin bx$ $\quad\quad$ $y = a\cos bx$
- $b > 0;\ \theta$ in $Radians$
  - $|a|$ is amplitude of function
  - b is number of cycles in the interval from 0 to 2π
  - $\frac{2\pi}{b}$ is period of the function

Graph of $y = sinx$

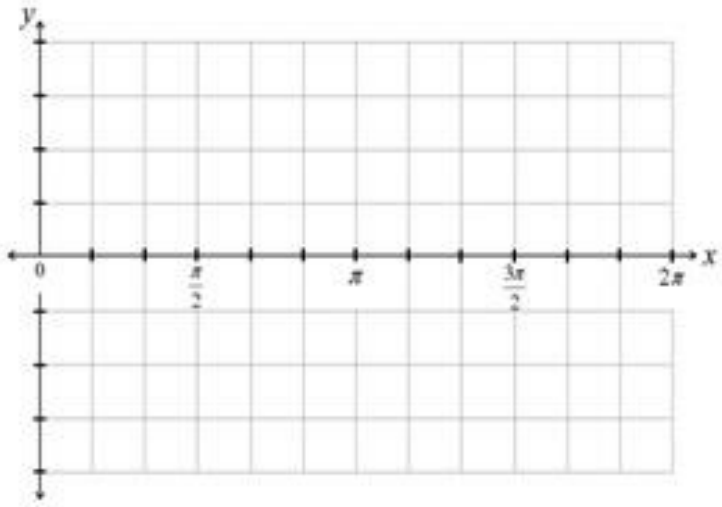


Graph of $y = cosx$

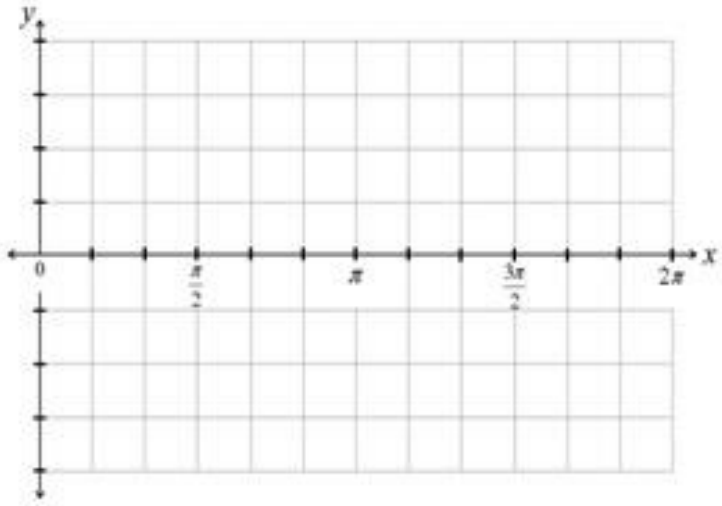


Examples:

- What is the amplitude of $f(x) = 0.4sin5x$?
- A sine curve has amplitude 0.2, period 8π, and $a > 0$. What is the equation in the form $y = asinb\theta$?
- What is the graph of one cycle of $y = 10sin4\theta$



- What is the graph of $y = 0.75cos3\theta$ on the interval 0 to 2π?

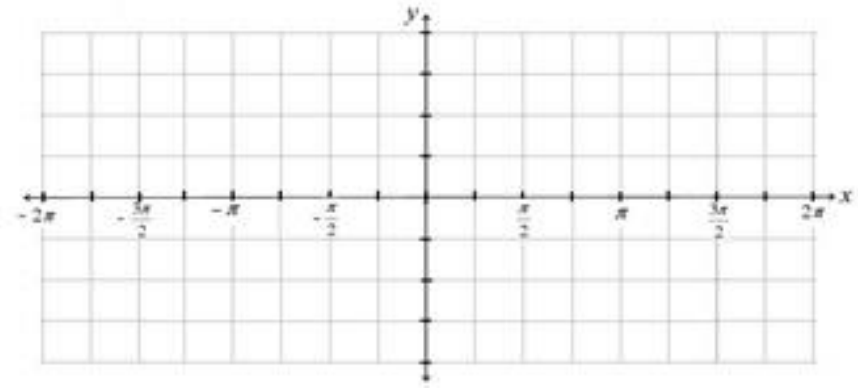


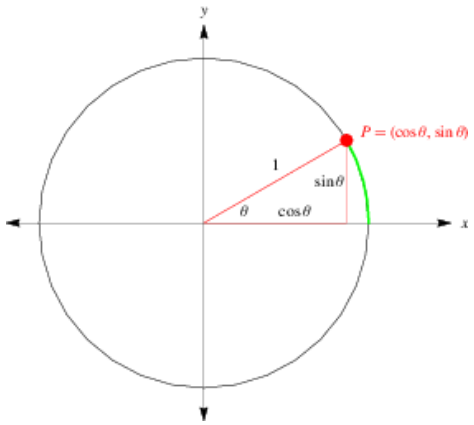
Properties of Tangent Function

- $y = a\tan b\theta$
- $b > 0;\ \theta$ in $Radians$
  - $\frac{\pi}{b}$ is period of the function
  - One cycle occurs in the interval $-\frac{\pi}{2b}$ to $\frac{\pi}{2b}$
  - There are vertical asymptotes at each end of the cycle

Graph $y = tanx$

- Remember, $tanx = \frac{Opposite}{Adjacent} = \frac{sin\theta}{cos\theta}$





Examples

- What is the value of each expression? Don't use a calculator.
  - $tan\frac{5\pi}{4}$
  - $tan\left(-\frac{\pi}{2}\right)$
  - $tan\frac{\pi}{6}$
- Sketch two cycles of $y = tan3\theta$