Agenda/Objectives/Notes PAPPC Sec 4.5 & Quiz 4.1 – 4.3

Starter Problem

1. Use trigonometric identities to transform the left side of the equation into the right side.

$$\frac{\sin\beta}{\cos\beta}+\frac{\cos\beta}{\sin\beta}=\csc\beta\sec\beta$$

2. Use a calculator to evaluate the trig function. Round to four decimal places.

a) $\sec 56°8'10''$ b) $\cos 56°8'10''$

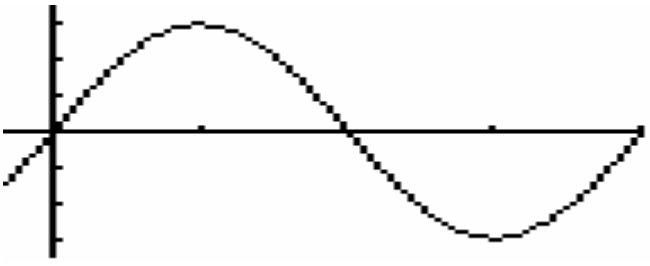
Today's Agenda
1. Starter problems
2. Review assignment due
3. Today's Objectives: You will be able to
   A) Sketch the graphs of basic sine and cosine functions.
   B) Use amplitude and period to help sketch the graphs of sine and cosine functions.
   C) Sketch transformations of sine and cosine functions.
   D) Use sine and cosine functions to model real-life problems.
4. Today's assignment: 328/15, 16, 22, 24, 28, 35, 42, 60, 74 & 339/1-6, 26, 36, 41, 48, 76
5. **Quiz** 4.1 – 4.3
6. Review for test 4.1 – 4.4

Notes

Definition of Amplitude of Sine and Cosine

The **amplitude** of $y = a \sin x$ and $y = a \cos x$ represent half the distance between the maximum and minimum values of the function and is given by: Amplitude = $| a |$.

EX: $y = 3 \sin x$



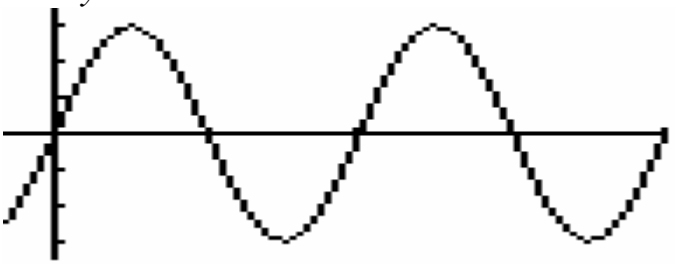
The minimum is -3 and the maximum is 3 therefore the amplitude = | 3 |.

Period of Sine and Cosine Functions

Let b be a positive real number. The **period** of $y = a \sin bx$ and $y = a \cos bx$ is given by

$$\text{Period} = \frac{2\pi}{b}$$

EX: $y = 3 \sin 2x$



The amplitude is 3 and the period is π.

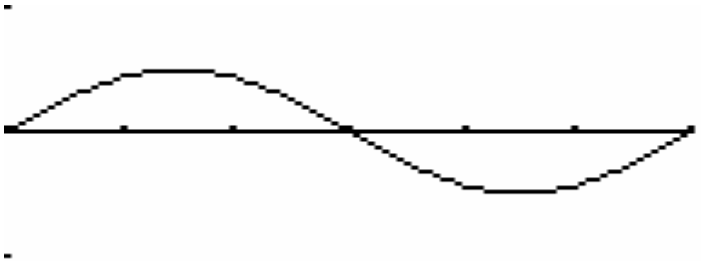
Graphs of Sine and Cosine Functions

The graphs of $y = a \sin(bx - c)$ and $y = a \cos(bx - c)$ have the following characteristics. (Assume $b > 0$.)

Amplitude = $|a|$ Period = $2\pi/b$

The left and right endpoints of a one-cycle interval can be determined by solving the equations $bx - c = 0$ and $bx - c = 2\pi$.

EX: $y = \frac{1}{2}\sin\left(x - \frac{\pi}{3}\right)$



The amplitude is ½. The period is 2π. By solving the equations

$x - \pi/3 = 0 \rightarrow x = \pi/3$

and

$x - \pi/3 = 2\pi \rightarrow x = 7\pi/3$