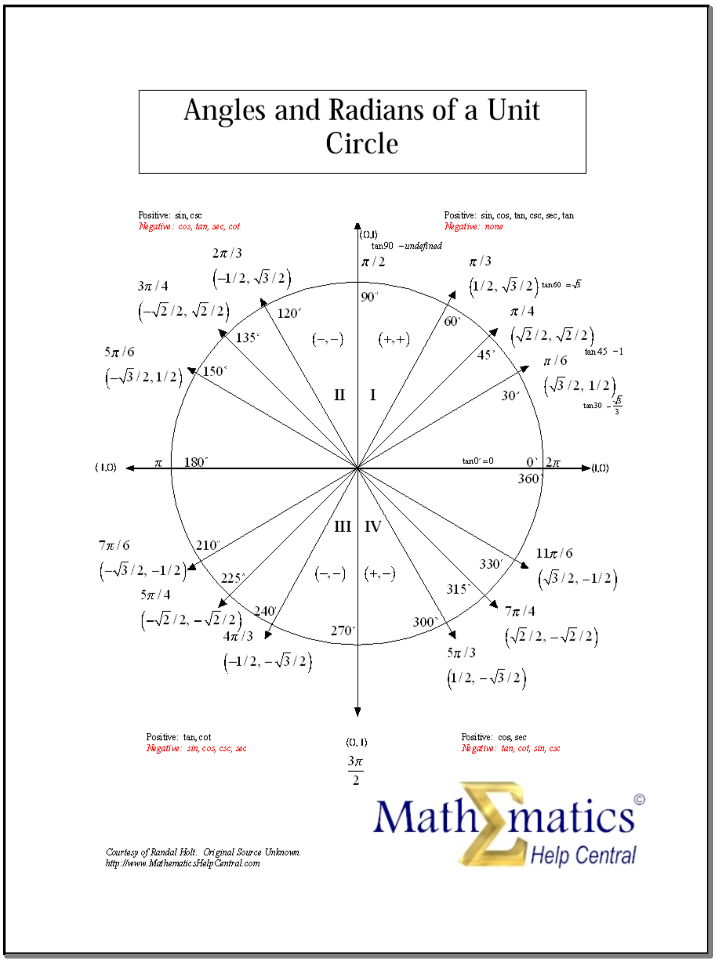

General Definition of a Periodic Function

$\sin(t + 2\pi n) = \sin t$ and $\cos(t + 2\pi n) = \cos t$

<u>Formal Definition</u>

A function 'f' is periodic if there exists a positive real number 'c' such that $f(t + c) = f(t)$ for all 't' in the domain 'f'.
The smallest number 'c' for which 'f' is periodic is called the period of 'f'.

From this definition it follows that the sine and cosine functions are periodic and have a period of **2π**.

Using the Period to Evaluate the Sine and Cosine

Evaluate: sin 13π/6

$\sin \frac{13\pi}{6} = \sin \frac{\pi}{6} = \frac{1}{2}$

$\frac{13\pi}{6} - 2\pi = \frac{\pi}{6}$

Evaluate: cos -7π/2

$\cos -\frac{7\pi}{2} = \cos \frac{\pi}{2} = 0$

$-\frac{7\pi}{2} + 2\pi = -\frac{3\pi}{2} + 2\pi = \frac{\pi}{2}$

Even and Odd Functions (FYI)

You might recall that a function 'f' is...
even if f(-t) = f(t) and is
odd if f(-t) = -f(t).
Of the six trig. functions, two are even and four are odd.

The cosine and secant functions are even.
cos(-t) = cos t   sec(-t) = sec t

The sine, cosecant, tangent, and cotangent functions are odd.
sin(-t) = -sin t   csc(-t) = -csc t
tan(-t) = -tan t   cot(-t) = -cot t

Evaluating Trig. Functions with a Calculator

When evaluating a trig. function with a calculator, you NEED to set the calculator to the desired mode of measurement (degrees or radians).

Also, most calculators do not have keys for the cosecant, secant, and cotangent functions. To evaluate these functions, you can use the $\boxed{[x^{-1}]}$ key with their respective reciprocal functions sine, cosine, tangent.

For example, to evaluate $\csc(\pi/8)$, use the fact that

$\csc(\pi/8) = 1/\sin(\pi/8)$ and enter the following keystroke

sequence in radian mode.

$(\sin(\pi \div 8))\ x^{-1}$ enter

2.6131259

Use a calculator to evaluate each expression.

a) $\sin 76.4^\circ \approx$ ~~.842~~

.972

b) $\cot 1.5 \approx$ .071

Assignment:

p. 134

32-38 even,
46-54 even

Quiz Wed
1.1-1.2