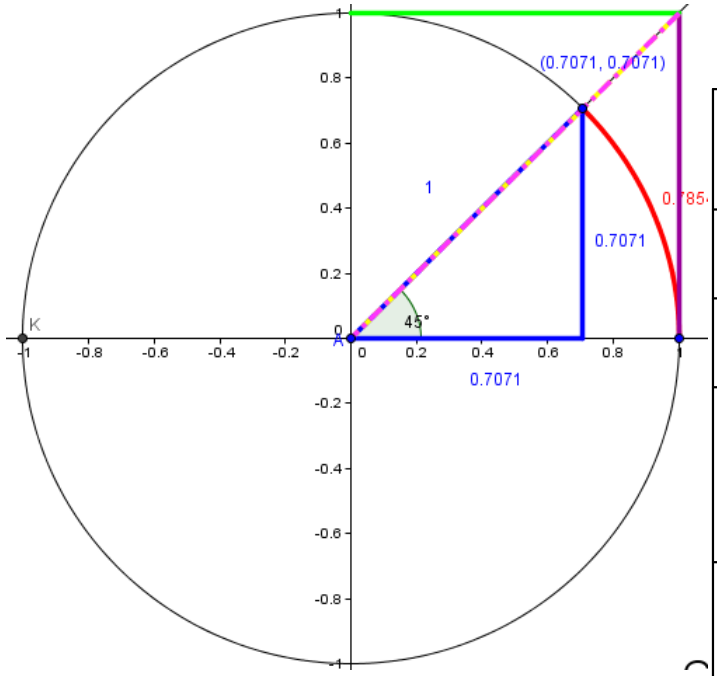
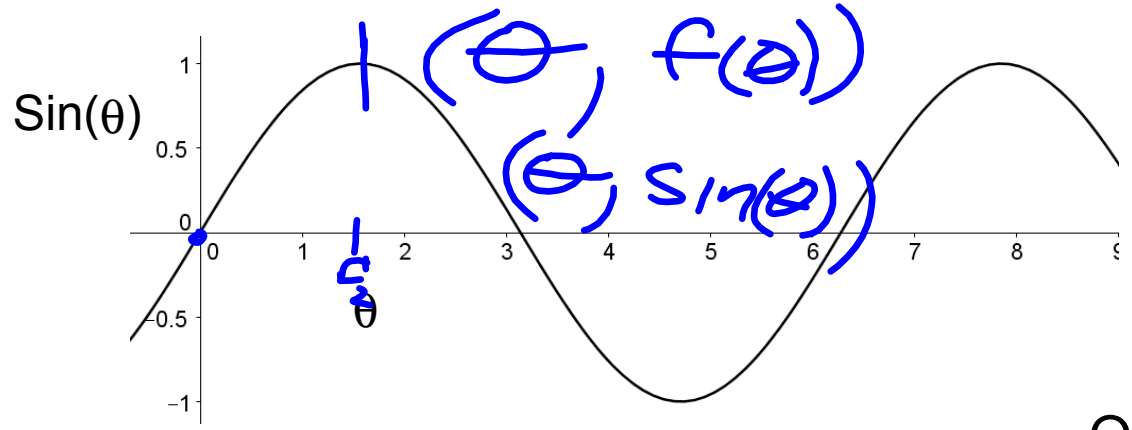
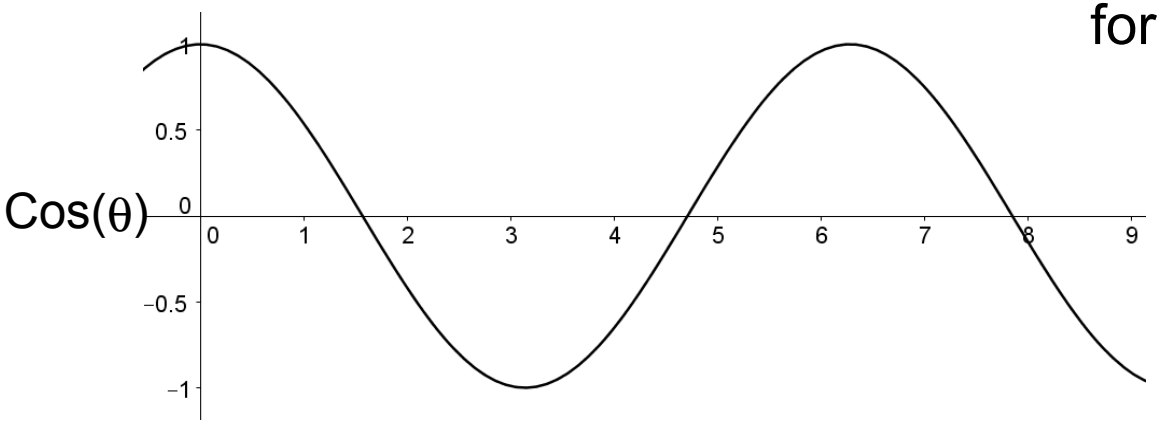
- The period of each trig function
    Using this to solve problems
- Domain and range of each trig functions
- Identities
    Using this to solve problems
- Even and odd properties
    - Using to solve



As I rotate through the quadrant the 7 values created by the angle change in different ways:

	0-90°	90-180°	180-270°	270-360°
Sin	0->1	1->0	0->-1	-1->0
Cos	1->0	0->-1	-1>0	0->1
Tan	0->1 ->und	und->-1 ->0	0->1 ->und	und->-1 ->0
Sec	1->und	und->-1	-1->und	und->1
Csc	und->1	1->und	und->-1	-1->und
Cot	und->1 ->0	0->-1 ->und	und->1 ->0	0->-1 ->und
Radian	0-$\pi/2$	$\pi/2$–π	π–$3\pi/2$	$3\pi/2$–2π





Other patterns
for sec,csc,tan,cot

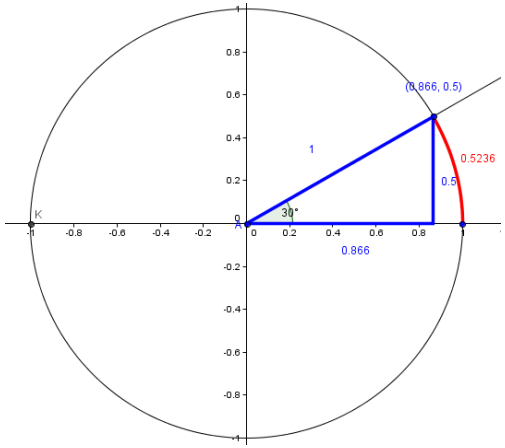
$$\sin^2\theta+\cos^2\theta=1$$

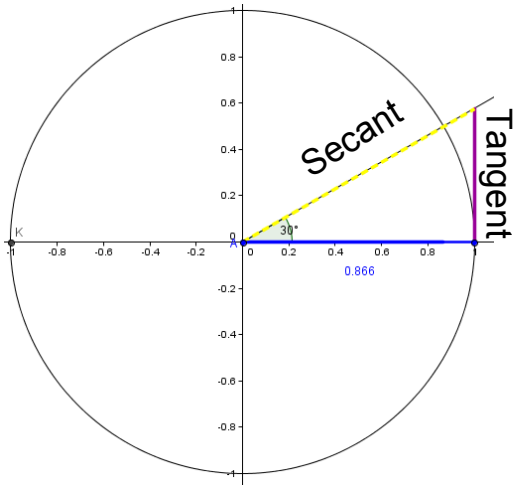
$$\frac{\sin^2\theta}{\cos^2\theta}+\frac{\cos^2\theta}{\cos^2\theta}=\frac{1}{\cos^2\theta}$$

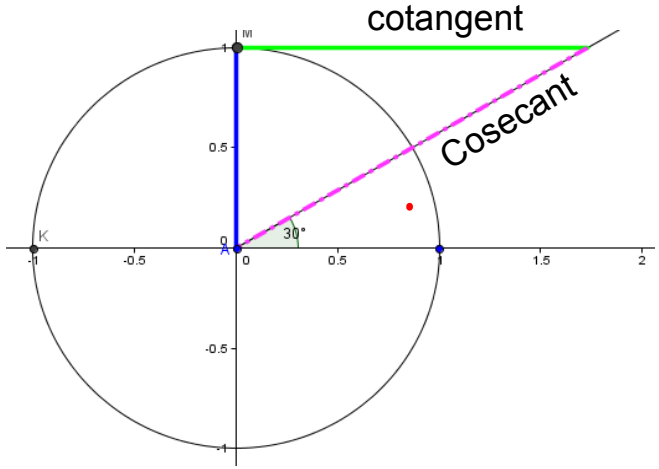
$$\tan^2\theta+1=\sec^2\theta$$

$$\frac{\sin^2\theta}{\sin^2\theta}+\frac{\cos^2\theta}{\sin^2\theta}=\frac{1}{\sin^2\theta}$$

$$1+\cot^2\theta=\csc^2\theta$$







Page 2 number 3

$\sin^2\theta+\cos^2\theta=1$ $\tan^2\theta+1=\sec^2\theta$ $1+\cot^2\theta=\csc^2\theta$

$\sec\theta=2$

What is $\tan\theta$?

$$\tan^2\theta+1=2^2$$
$$\tan^2\theta=3$$
$$\tan\theta=\pm\sqrt{3}$$

Page 2, more formal statement of something we already use:

Periodicity: the tendency to recur at intervals.

Do coterminal have the same sine and cosine?

$$\sin(\theta + 2\pi * x) = \sin(\theta)$$

where x is any integers

Co-terminal angles
well, duh.

$$\sin(\theta + 360 * x) = \sin(\theta)$$

$$\cos(\theta + 360 * x) = \cos(\theta)$$

$$\cos(\theta + 2\pi * x) = \cos(\theta)$$

where x is any integers

Use the fact that trig functions are periodic to find the sin of an angle.

Sin(750°)=?

$\sin(\theta) = \sin(\theta + 2\pi k)$

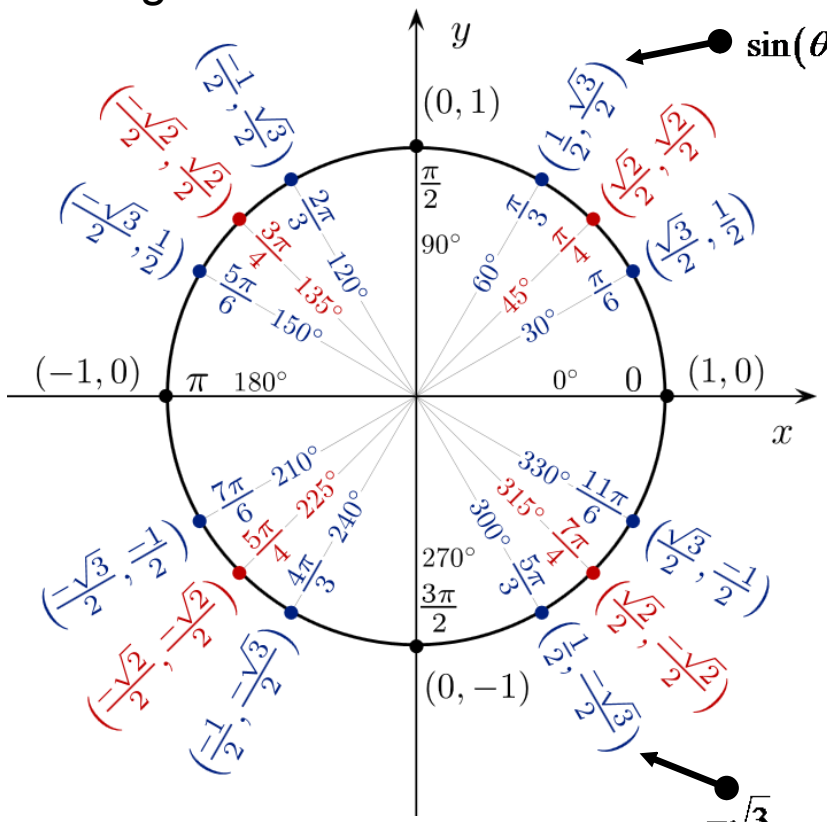
Same with cos, cosec, and sec

But tangent?

$\tan(\theta) = \tan(\theta + \pi k)$

Same with cotan

Page 3



$\sin(\theta)=\frac{\sqrt{3}}{2},\cos(\theta)=\frac{1}{2},\csc(\theta)=\frac{2\sqrt{3}}{2},\sec=2,\tan=\sqrt{3},\cot=\frac{\sqrt{3}}{3}$

θ

odd: f(-x) = -f(x)
even: f(-x) = f(x)

-θ

$\sin(-\theta)=\frac{-\sqrt{3}}{2},\cos(-\theta)=\frac{1}{2},\csc(-\theta)=\frac{-2\sqrt{3}}{2},\sec=2,\tan=-\sqrt{3},\cot=\frac{-\sqrt{3}}{3}$

Even and Odd

$\sin(-\theta)=-\sin(\theta)$ $\cos(-\theta)=\cos(\theta)$ $\tan(-\theta)=-\tan(\theta)$

$\csc(-\theta)=-\csc(\theta)$ $\sec(-\theta)=\sec(\theta)$ $\cot(-\theta)=-\cot(\theta)$

Page 4

Playing with your head with notation

$f(\theta)=\sin(\theta), f(a)=\frac{2}{5}$ means: $\sin(a)=\frac{2}{5}$

$f(-a)$

$f(a)+f(a+6\pi)$

Add:

$$\sin(\theta \pm \pi) = -\sin(\theta)$$

$$\cos(\theta \pm \pi) = -\cos(\theta)$$

$$\csc(\theta \pm \pi) = -\csc(\theta)$$

$$\sec(\theta \pm \pi) = -\sec(\theta)$$

$\tan(\theta \pm \pi) = \tan\theta$

$\cot(\theta \pm \pi) = \cot\theta$

Remember:

$$\sin(\theta) = \cos\left(\frac{\pi}{2} - \theta\right)$$

$$\cos(\theta) = \sin\left(\frac{\pi}{2} - \theta\right)$$

Or maybe...

$$\sin(\theta \pm \pi) = -\sin(\theta) = \sin(-\theta)$$

$$\cos(\theta \pm \pi) = -\cos(\theta) = -\cos(-\theta)$$

$$\csc(\theta \pm \pi) = -\csc(\theta) = \csc(-\theta)$$

$$\sec(\theta \pm \pi) = -\sec(\theta) = -\sec(-\theta)$$

70) $\tan(10^o)*\cot(10^o)$

76)

$$\sec\left(\frac{-\pi}{18}\right)\cos\left(\frac{37\pi}{18}\right)$$

$$\frac{\sin\left(70^o\right)}{\cos(-430^o)}+\tan\left(-70^o\right)$$