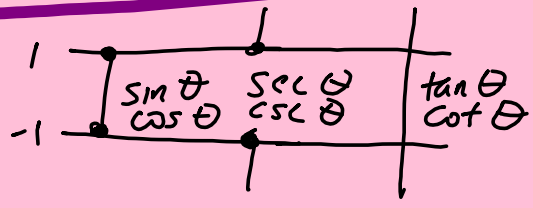
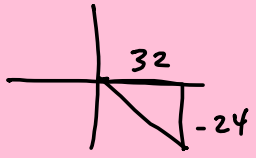
Semester Review



2 & 5) Draw a picture!



3) Coterminal angles to 670°

$670^\circ - 360^\circ = 310^\circ$

$310^\circ - 360^\circ = -50^\circ$

Know & fund. identities

Know spec. $\angle$ values

Convert Degs to Rads

$\times \frac{\pi}{180^\circ}$

$220^\circ \cdot \frac{\pi}{180^\circ} = \frac{220}{180}\pi = \frac{11\pi}{9}$

Convert Rads to Deg

$\times \frac{180^\circ}{\pi}$

Arc Length

$s = r\theta$

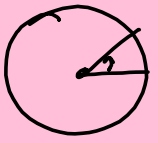
cm
ft
mi

Area of Sector

$A = \frac{1}{2}\theta r^2$

ft^2, m^2

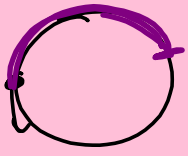
Angular Velocity



$\omega = \frac{\theta}{t}$

$\frac{rad}{sec}, \frac{rad}{min}$

Linear Velocity

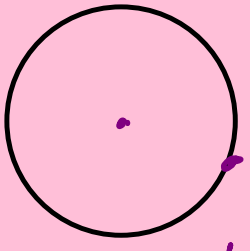


$V = \frac{s}{t} = \frac{r\theta}{t} = r\omega$

$\frac{ft}{s}, \frac{m}{min}, \frac{mi}{hr}$

All must be done in rads!

Discus = 10" diam.



Connor throws at 420,000 rev/sec

Find angular vel.

$$\omega = \frac{\theta}{t} = \frac{420{,}000 \cdot 2\pi}{1 \text{ sec}} =$$

$$= 840{,}000\pi \ \frac{rad}{sec}$$

Find linear vel.

$$V = \frac{r\theta}{t} = \frac{5 \text{ in} \cdot 420{,}000 \cdot 2\pi}{1 \text{ sec}}$$

$$4{,}200{,}000\pi \ \frac{in}{sec}$$

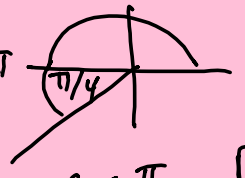
$$4{,}200{,}000\pi \ \frac{in}{sec} \cdot \frac{1 \ ft}{12 \ in} \cdot \frac{1 \ mi}{5280 \ ft} \cdot \frac{3600 \ sec}{1 \ hr}$$

$$= \frac{4{,}200{,}000\pi \cdot 3600}{12 \cdot 5280} = 749{,}698.25 \ \frac{mi}{hr}$$

11 Right Δ ← Oscar/soh.... Law of sines/cosines

12 Special angles

$\sec \frac{5\pi}{4} = -\sqrt{2}$ (1¼)



$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

13-15 Identities
- Pay attention to angles!

$\cos 2x = \cos^2 x - \sin^2 x$
$= 1 - 2\sin^2 x$
$= 2\cos^2 x - 1$

$$\frac{\sin 2x}{\cos 2x - 1} = -\cot x \cos^2 x - \cot x \sin^2 x$$

$$\frac{2\sin x \cos x}{1 - 2\sin^2 x - 1} = -\cot x (\cos^2 x + \sin^2 x)$$

$$-\frac{\cos x}{\sin x} = -\cot x$$

$$-\frac{\cos x}{\sin x} = -\frac{\cos x}{\sin x}$$

14 & 15

Find $\sin(A+B) =$

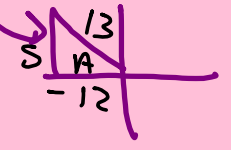
$\sin A = \frac{5}{13}$ y QII, r

$\sin(A+B) = \sin A \cos B + \cos A \sin B$

No trig func

$= (\ )(\ ) + (\ )(\ )$

1) Write out the identity
2) Draw picture(s)
3) Fill in values



GRAPHING (16 & 17)

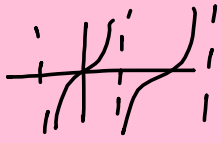
$y = a\,\_\_\_\,(bx+c)+d$

sin, cos | sec, csc | tan, cot

	sin, cos	sec, csc	tan, cot
amp.	$\lvert a \rvert$	NA	NA
period	$\frac{2\pi}{b}$	$\frac{2\pi}{b}$	$\frac{\pi}{b}$
V.S.	d	d	d
phase shift (horiz. shift)	$bx+c=0$, $x=\frac{-c}{b}$	$bx+c=0$	$bx+c=0$

amp = height of wave

period = length of one cycle



$y=(x-4)^2+7$

$y-4=0$

- sin x starts on axis
- cos x starts at peak
- tan x rises
  - shifts center
- cot x falls
  - shifts asymp.

When given graph,

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

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$y = 3\csc\left(2x - \frac{\pi}{2}\right) + 1$

amp: NA (3)

period: $\frac{2\pi}{2} = \pi$

v.s. $+1$

p.s. $2x - \frac{\pi}{2} = 0$, $2x = \frac{\pi}{2}$, $x = \frac{\pi}{4}$

spacing $\pi \cdot \frac{1}{4} = \frac{\pi}{4}$

p.s. $\frac{\pi}{4}$ $\frac{2\pi}{4}$ $\frac{3\pi}{4}$ $\frac{4\pi}{4}$ $\frac{5\pi}{4}$

$\frac{\pi}{4}$ $\frac{\pi}{2}$ $\frac{3\pi}{4}$ π $\frac{5\pi}{4}$