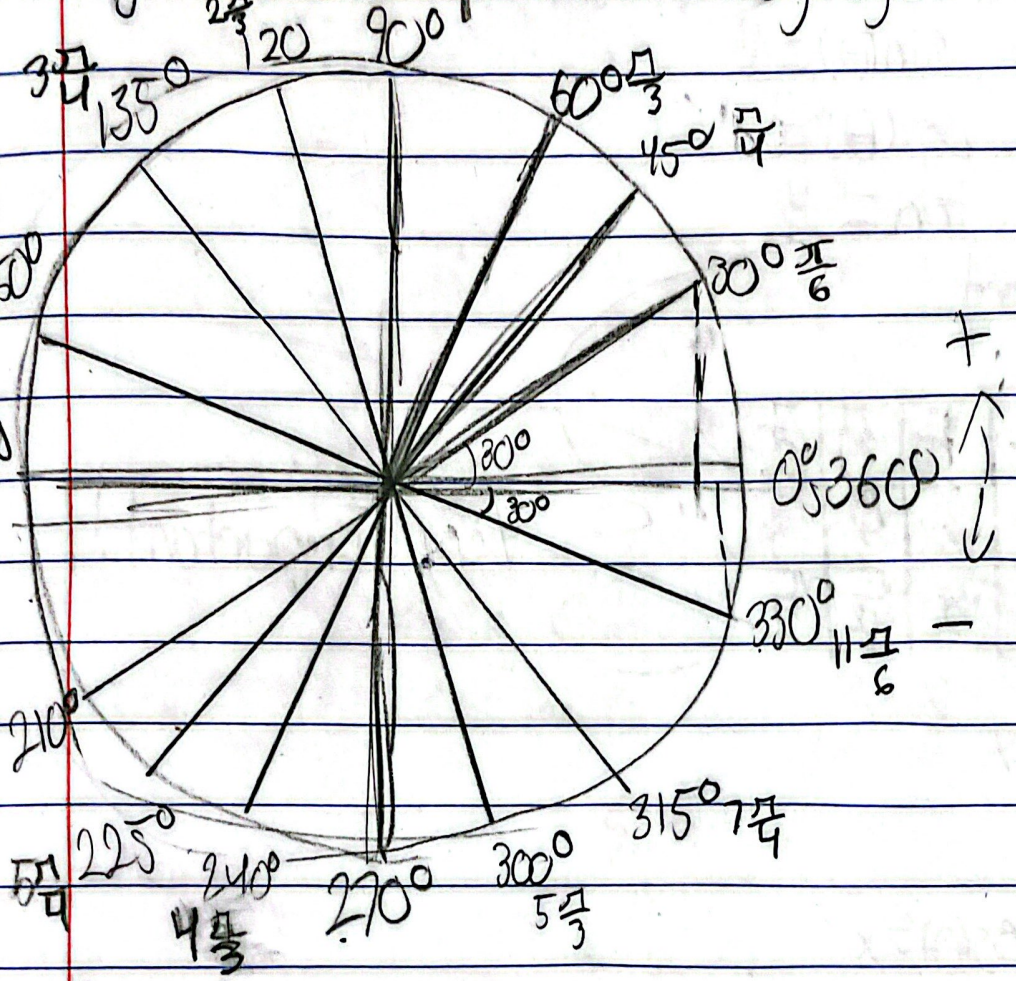
1.4 Trigonometric functions

8/14/24

angles: 3 most important are 30°, 45°, 60°



Convert angles: Science: Degrees° ↔ Math: Radians

$\frac{\pi}{180}$ = Radian $\frac{180}{\pi}$ = Degrees

$\frac{(\#)\pi}{\#} \quad \frac{\pi}{(2\#-1)\pi} \quad \frac{(\#+1)\pi}{\#}$

functions: sine & cosine tangent

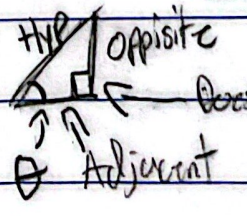
$\tan(\theta) \frac{\text{Opposite}}{\text{Adjacent}}$ $\sin(\theta) = \frac{\text{Opposite}}{\text{Hypotenuse}}$ $\cos(\theta) = \frac{\text{Adjacent}}{\text{Hypotenuse}}$

$\sec(\theta) = \frac{\text{Hypotenuse}}{\text{Adjacent}}$

$\tan(x) = \frac{\sin(x)}{\cos(x)}$

$\cot(x) = \frac{\text{Adjacent}}{\text{Opposite}}$

$\cot(x) = \frac{1}{\tan\theta} = \frac{\cos\theta}{\sin\theta}$

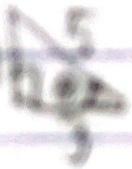


Doesn't need to be $\frac{2\pi}{4}$ / 90°

cosecant secant

$\csc = \frac{1}{\sin\theta}$ $\sec = \frac{1}{\cos}$

Solving Trig functions



$\sin(\theta) = \frac{y}{r}$

$\cos(\theta) = \frac{x}{r}$

$\tan = \frac{y}{x}$

Trig Chart

θ					
s					
c					

Very Important!!

$\cos(\theta) = x$

$\sin(\theta) = y$

1.4 continued

Solving in the First Quadrant

angles $\in [0, \frac{\pi}{2}]$

$\frac{\frac{x}{r}}{\frac{y}{r}} = \frac{x}{y}$

Solving in other Quadrant

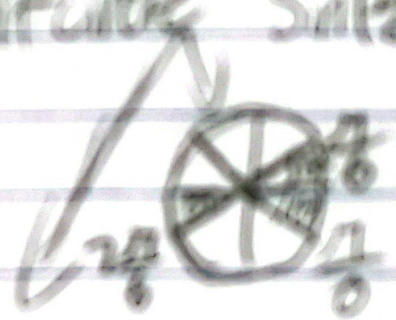
Any angle: Reference with circle

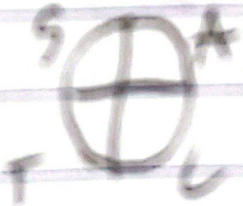
$\sin(\frac{7\pi}{6}) = \sin(\frac{\pi}{6})$

$\sin(\frac{7\pi}{6}) = -\sin(\frac{\pi}{6})$

$\sin\theta = y$ coordinate

$\cos\theta = x$ coordinate





A = All positive

S = Sin positive

T = Tan positive

C = Cos positive

Graphing

sin max 1 & -1 also cos.