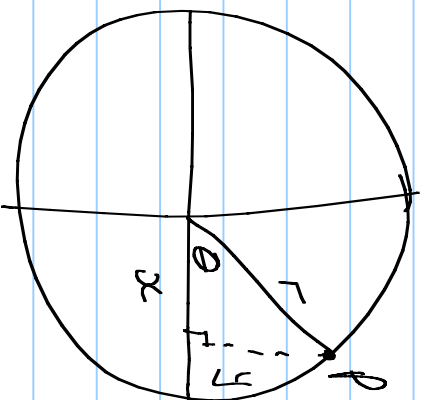


# APPLICATIONS OF REFERENCE ANGLES

RECALL:

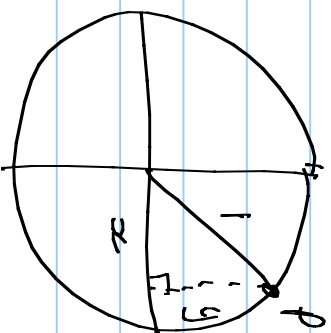


$$\sin \theta = \frac{y}{r}$$

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

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

— WHAT HAPPENS IF THE RADIUS = 1 (THE UNIT CIRCLE)?

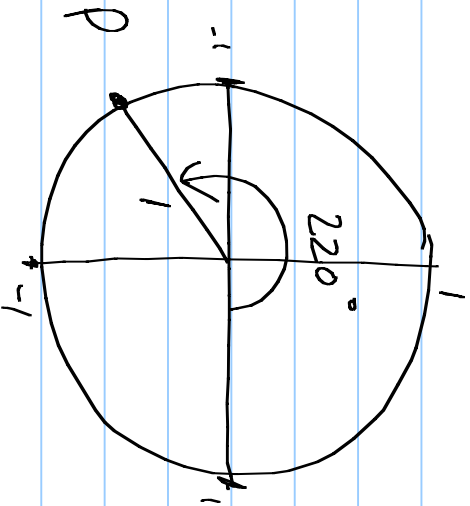


$$\sin \theta = \frac{y}{1} \quad \cos \theta = \frac{x}{1}$$

$$\sin \theta = y \quad \cos \theta = x$$

THEFORE, FOR ANY POSITION OF "P" ON THE UNIT CIRCLE, X-VALUE IS  $\cos \theta$ , Y-VALUE IS  $\sin \theta$

IE FIND THE COORDINATES OF "P" GIVEN



$$\cos 220^\circ = -0.766$$

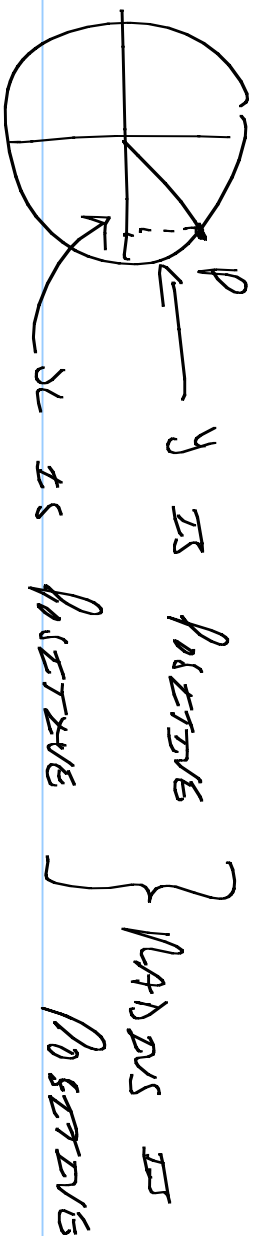
$$\sin 220^\circ = -0.643$$

$$\therefore P(-0.766, -0.643)$$

- WHAT HAPPENS TO  $\sin \theta$ ,  $\cos \theta$ ,  $\tan \theta$  AS WE

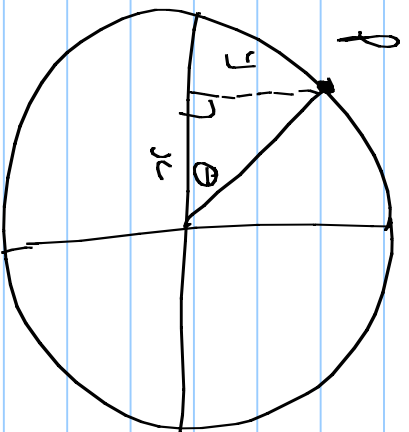
NOTATE "P" AROUND THE CIRCLE?

IE  $\theta$  BETWEEN  $0$  AND  $90^\circ$  (QUANT #1)



$\therefore$   $\left. \begin{array}{l} \text{SEN } \theta \\ \text{COS } \theta \\ \text{TAN } \theta \end{array} \right\} \text{ ALL POSITIVE}$

$\rho$  BETWEEN  $90^\circ$  AND  $180^\circ$  (QUAD #2)

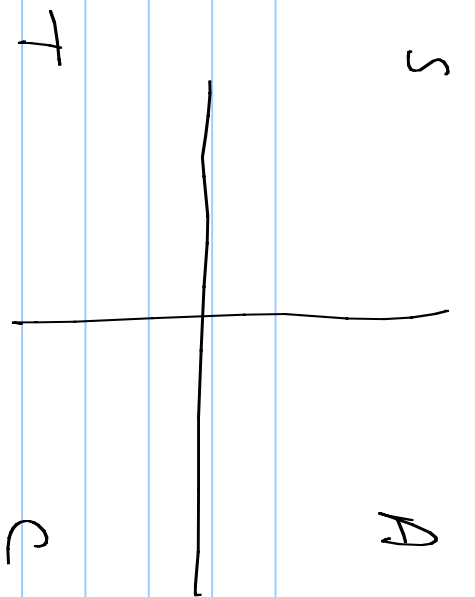


$x$  IS NEGATIVE  
 $y$  IS POSITIVE

$$\text{SEN } \theta = \frac{y}{r} = \text{POSITIVE}$$

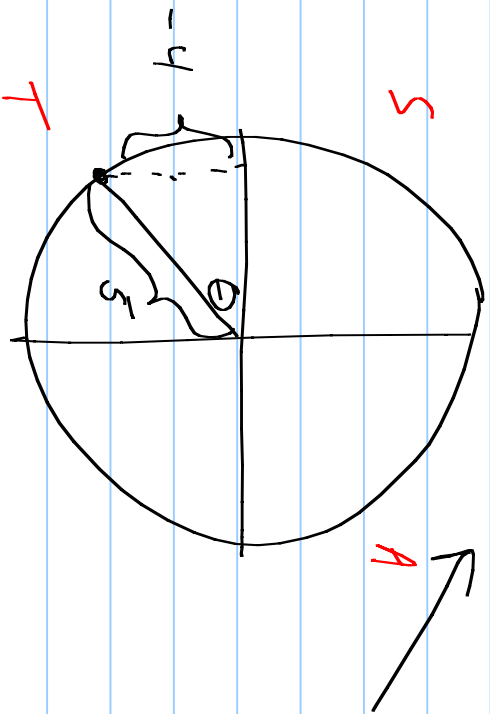
$$\text{COS } \theta = \frac{x}{r} = \text{NEGATIVE}$$

$$\text{TAN } \theta = \frac{y}{x} = \text{NEGATIVE}$$



QUAD 1 - ALL POSITIVE  
 QUAD 2 - SEN POSITIVE  
 QUAD 3 - TAN POSITIVE  
 QUAD 4 - COS POSITIVE

~~THE~~  $\text{SEN } A = -\frac{4}{5}$ , QUAD 3 FIND  $\text{TAN } A$



$$\text{SEN } A = \frac{O}{H} = -\frac{4}{5}$$

$$\text{TAN } A = \frac{O}{A}$$

$$a^2 + b^2 = c^2$$

$$\tan A = \frac{-4}{-3}$$

$$(-4)^2 + b^2 = 5^2$$

$$-16 + b^2 = 25$$

$$\tan A = \frac{4}{3}$$

$$b^2 = 9$$

$$b = -3$$

H/W Pg 161 # 1-6, 9, 14-16