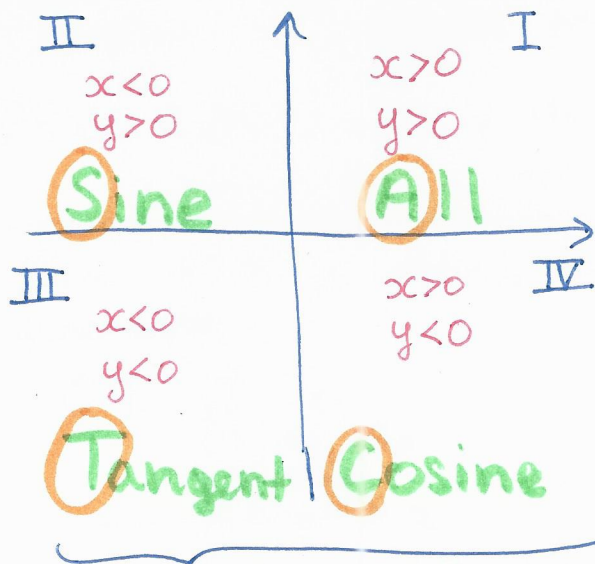


The Sign (\pm) of the Trig. Ratios.



definitions:

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

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

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

$$r = OP; r = \sqrt{x^2 + y^2}$$

$$r > 0$$

CAST Rule tells (helps remember)

What is positive (and where)

Example: $30^\circ, 150^\circ, 210^\circ, 330^\circ$

$$\sin 30^\circ = \frac{1}{2}, \quad \left| \frac{1}{2} \right| = \frac{1}{2}$$

$$\sin 150^\circ = \frac{1}{2} \checkmark$$

$$\begin{array}{c|c} \text{S} & \text{A} \\ \hline \text{T} & \text{C} \end{array}$$

cannot be both!
CAST will tell!

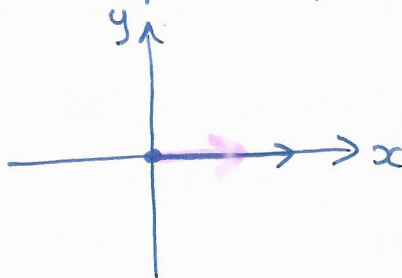
$$\sin 210^\circ = -\frac{1}{2}$$

$$\begin{array}{c|c} \text{S} & \text{A} \\ \hline \text{T} & \text{C} \end{array}$$

- summary:
- ① The magnitude of a ratio is due to RAA.
 - ② The sign (\pm plus OR minus) is due to CAST. not both!

Quadrantal Angles: terminal arm is either on the x-axis or on the y-axis.

Examples: $0^\circ, 90^\circ, 180^\circ, 270^\circ$ and 360°



$$P(5, 0)$$

$$r = 5$$

$$x = 5$$

$$y = 0$$

$$\sin 0^\circ = \frac{y}{r} = \frac{0}{5} = 0$$

$$\cos 0^\circ = \frac{x}{r} = \frac{5}{5} = 1$$

$$\tan 0^\circ = \frac{y}{x} = \frac{0}{5} = 0$$