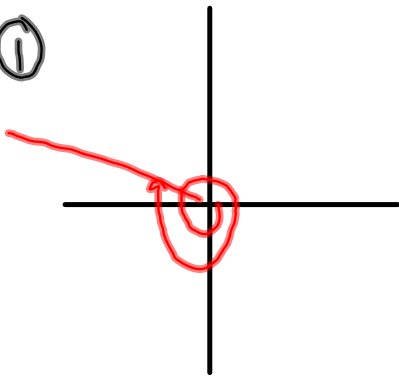


Warm Up

1. Sketch the following angle: -545°
2. Determine a negative angle co-terminal with 200° .
3. Determine the principal angle of $-78\,453^\circ$.

①



② $A_c = 200 - 360$
 $= -160^\circ$

③ ① $-78\,453 \div 360 = -217.925$

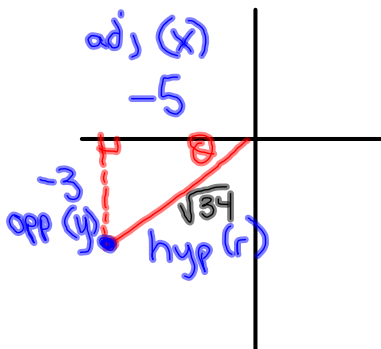
② $-217.925 - (-217) = -0.925$

③ $-0.925 \times 360 = -333$

④ $-333 + 360 = 27^\circ$

Warm Up

Determine the 6 trigonometric ratios of an angle whose terminal arm passes through the ordered pair $(-5, -3)$.



$$\begin{aligned} a^2 + b^2 &= c^2 \\ (-3)^2 + (-5)^2 &= c^2 \\ 9 + 25 &= c^2 \\ 34 &= c^2 \\ \sqrt{34} &= c \end{aligned}$$

$$\sin \theta = \frac{-3 \cdot \sqrt{34}}{\sqrt{34} \cdot \sqrt{34}} = -\frac{3\sqrt{34}}{34}$$

$$\cos \theta = \frac{-5 \cdot \sqrt{34}}{\sqrt{34} \cdot \sqrt{34}} = -\frac{5\sqrt{34}}{34}$$

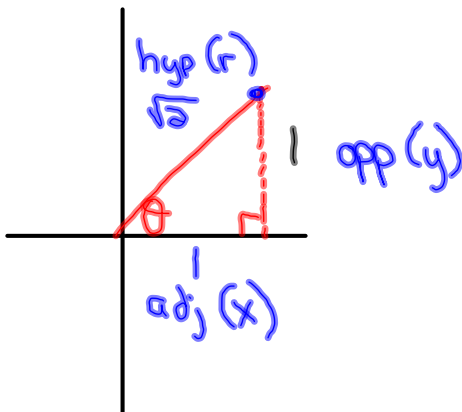
$$\tan \theta = \frac{-3}{-5} = \frac{3}{5}$$

$$\csc \theta = \frac{\sqrt{34}}{-3} = -\frac{\sqrt{34}}{3}$$

$$\sec \theta = \frac{\sqrt{34}}{-5} = -\frac{\sqrt{34}}{5}$$

$$\cot \theta = \frac{5}{3}$$

θ is a first quadrant angle. If $\cos \theta = \frac{1}{\sqrt{2}}$, find $\sin \theta$ and $\sec \theta$



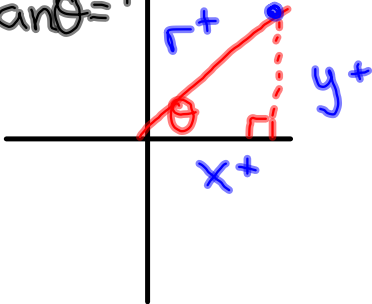
$$\begin{aligned} a^2 + b^2 &= c^2 \\ (1)^2 + b^2 &= (\sqrt{2})^2 \\ 1 + b^2 &= 2 \\ b^2 &= 1 \\ \boxed{b} &= 1 \end{aligned}$$

$$\sin \theta = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

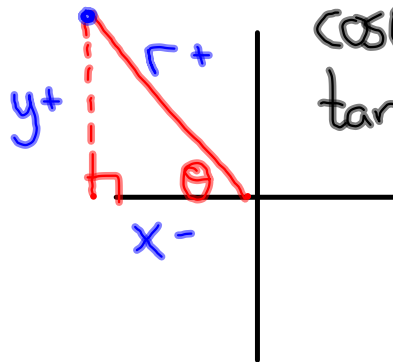
$$\sec \theta = \frac{\sqrt{2}}{1} = \sqrt{2}$$

Review signs of the trig ratios in the 4 quadrants

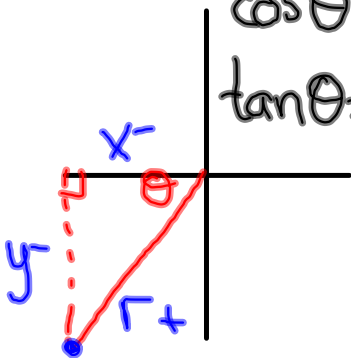
① $\sin\theta = +$
 $\cos\theta = +$
 $\tan\theta = +$



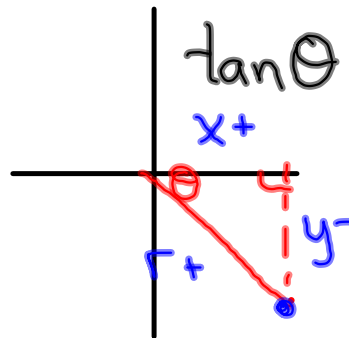
② $\sin\theta = +$
 $\cos\theta = -$
 $\tan\theta = -$



③ $\sin\theta = -$
 $\cos\theta = -$
 $\tan\theta = +$



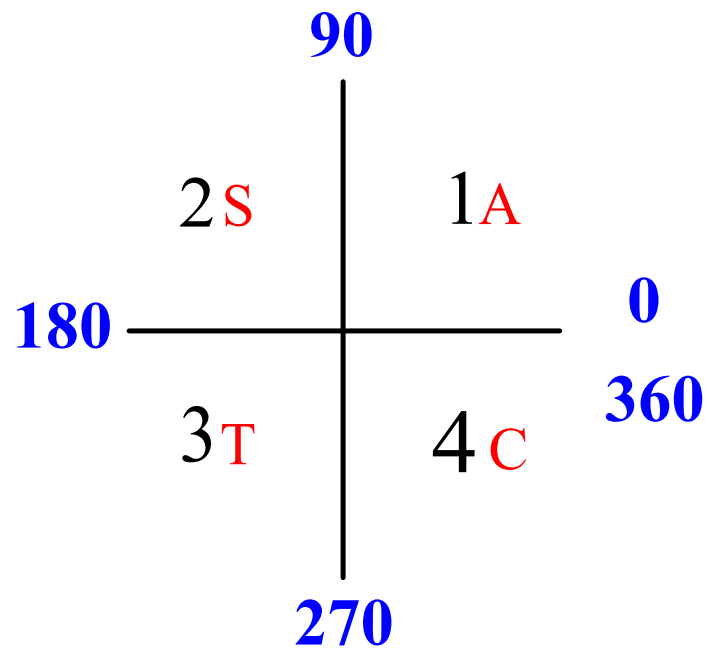
④ $\sin\theta = -$
 $\cos\theta = +$
 $\tan\theta = -$



Cast Rule

Quadrants

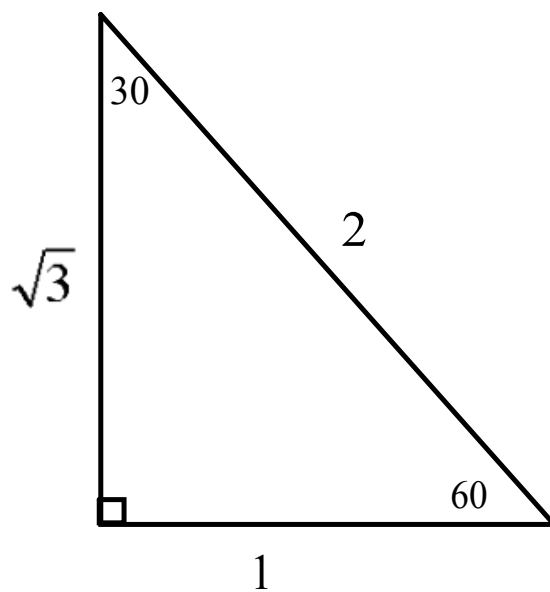
Remember 4CAST



Special Angles

I. 30° and 60°

MEMORIZE THESE DIAGRAMS!!!

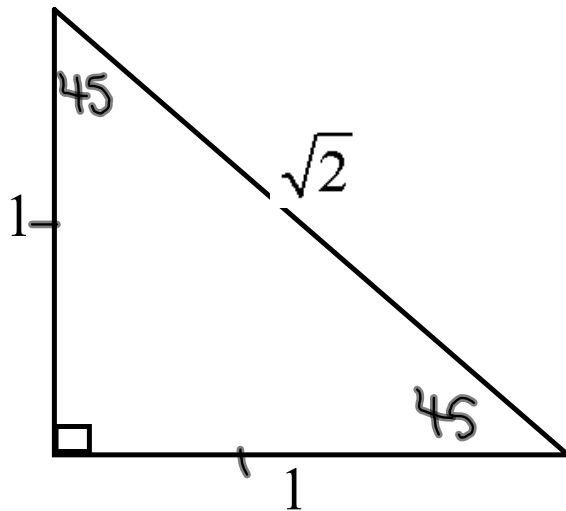


	30°	60°
Sin	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
Cos	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
Tan	$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$	$\sqrt{3}$

Special Angles

II. 45°

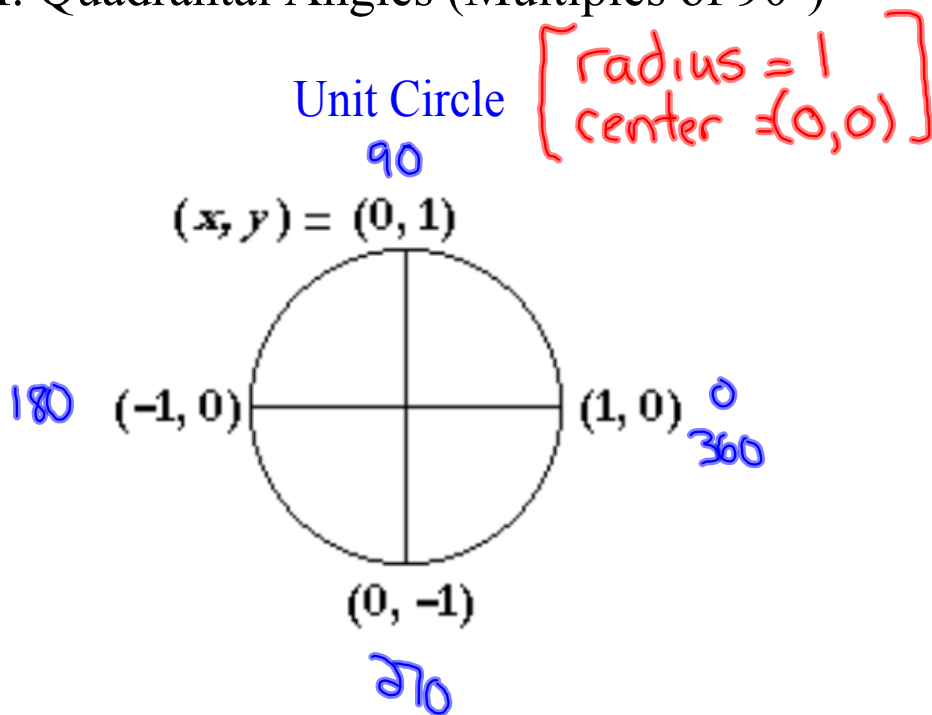
MEMORIZE THESE DIAGRAMS!!!



	45
Sin	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
Cos	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
Tan	1

MEMORIZE THESE DIAGRAMS!!!

III. Quadrantal Angles (Multiples of 90°)



	0°	90°	180°	270°	360°
$\sin(\theta)$	0	1	0	-1	0
$\cos(\theta)$	1	0	-1	0	1
$\tan(\theta)$	0	undefined	0	undefined	0

Extend the special angles into all FOUR quadrants

Without a calculator determine the value of $\cos 240^\circ$ $\text{ref } \theta = 60$

1. Start by sketching the angle

$$\cos 240^\circ = -\frac{1}{2}$$

