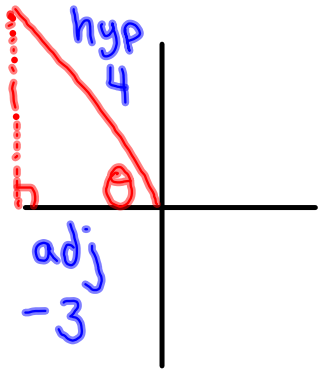
Questions from Homework

⑤ a)



$\cos\theta = -\frac{3}{4}$ $\frac{\text{adj}}{\text{hyp}}$

To find the opp:

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

$(-3)^2 + b^2 = 4^2$

$9 + b^2 = 16$

$b^2 = 7$

$b = \pm\sqrt{7}$

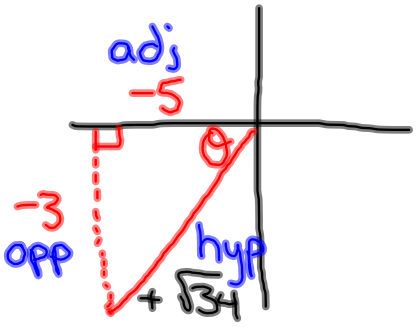
b) $\sin\theta = \frac{\sqrt{7}}{4}$

$\tan\theta = \frac{\sqrt{7}}{-3} = -\frac{\sqrt{7}}{3}$

c) $(x, y) \rightarrow \tan\theta = \frac{y}{x}$

Warm Up

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



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

$(-3)^2+(5)^2=c^2$

$34=c^2$

$\pm\sqrt{34}=c$

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

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

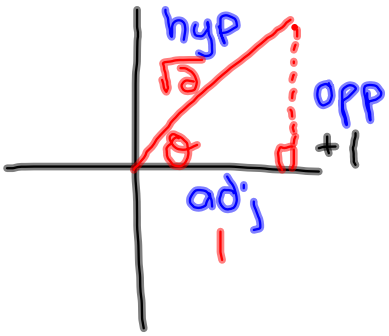
$\tan\theta=\frac{-3}{-5}=\frac{3}{5}$

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

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

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

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



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

$(1)^2+b^2=(\sqrt{2})^2$

$1+b^2=2$

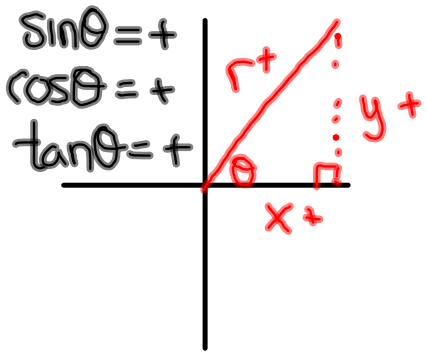
$b^2=1$

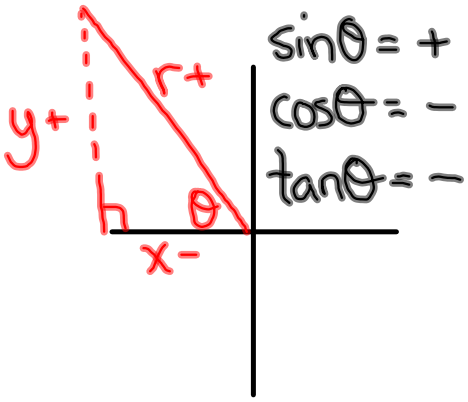
$b=\pm1$

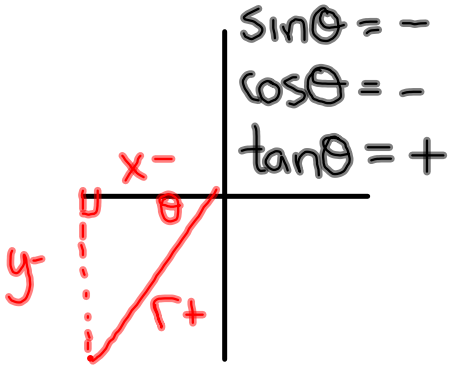
$\sin\theta=\frac{1}{\sqrt{2}}=\frac{\sqrt{2}}{2}$

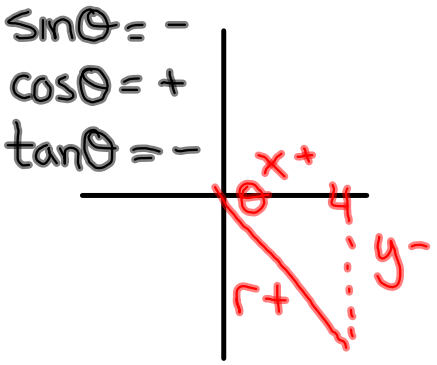
$\sec\theta=\frac{\sqrt{2}}{1}=\sqrt{2}$

Review signs of the trig ratios in the 4 quadrants





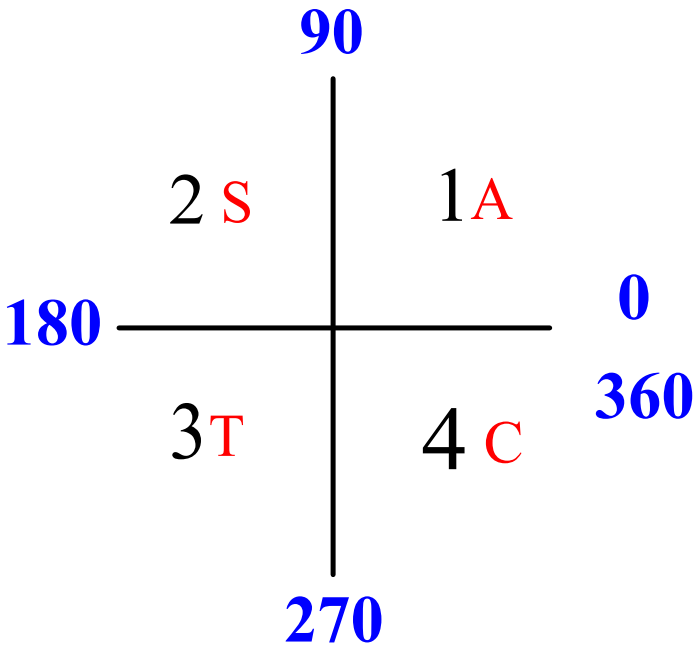




Cast Rule

Quadrants

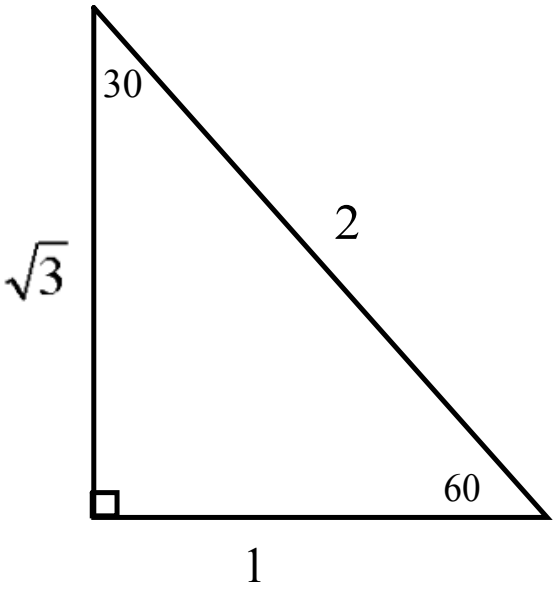
Remember 4CAST



Special Angles

I. 30° *and* 60°

MEMORIZE THESE DIAGRAMS!!!

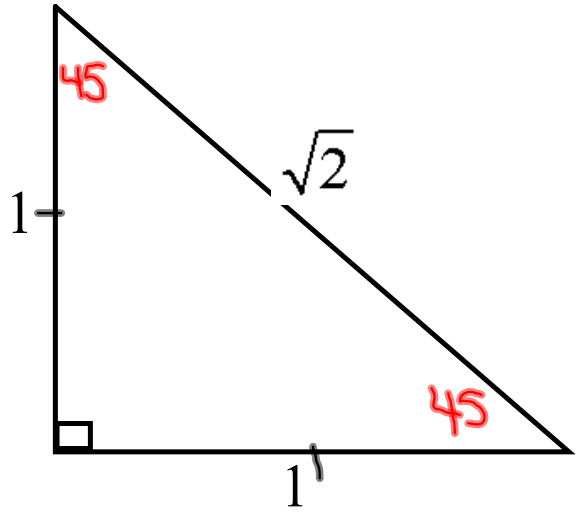


	30	60
Sin	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
Cos	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
Tan	$\frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$	$\sqrt{3}$

Special Angles

II. 45°

MEMORIZE THESE DIAGRAMS!!!

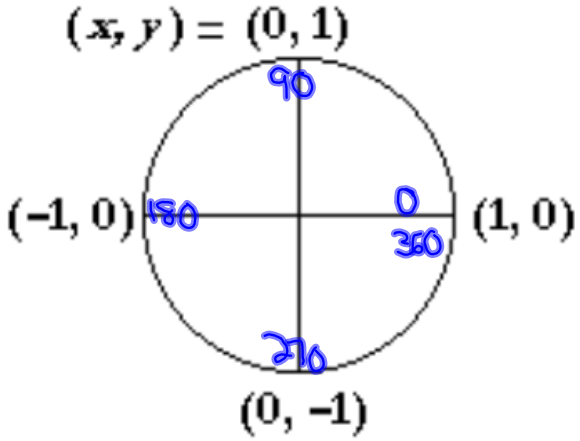


	45
Sin	$\frac{1}{\sqrt{2}}$ or $\frac{\sqrt{2}}{2}$
Cos	$\frac{1}{\sqrt{2}}$ or $\frac{\sqrt{2}}{2}$
Tan	1

MEMORIZE THESE DIAGRAMS!!!

III. Quadrantal Angles (Multiples of 90°)

Unit Circle



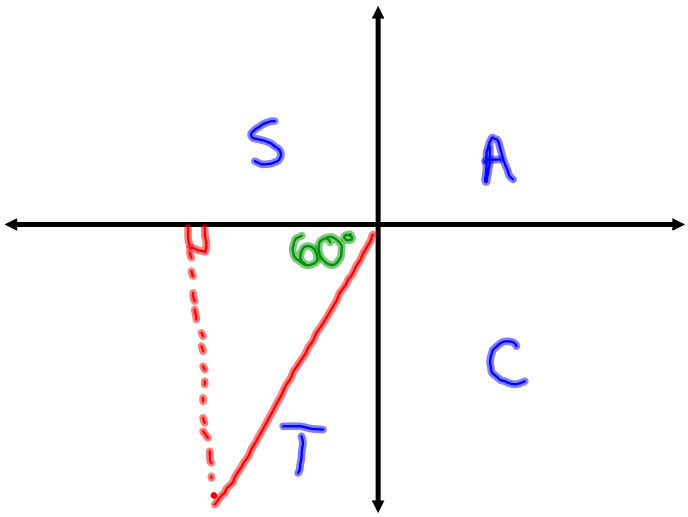
* $\sin\theta = y$ $\csc\theta = \frac{1}{y}$
$\cos\theta = x$ $\sec\theta = \frac{1}{x}$
$\tan\theta = \frac{y}{x}$ $\cot\theta = \frac{x}{y}$

	0^0	90^0	180^0	270^0	360^0
sin	0	1	0	-1	0
cos	1	0	-1	0	1
tan	0	undefined	0	undefined	0

Extend the special angles into all FOUR quadrants

Without a calculator determine the value of $\cos 240°$ ref $\theta = 60°$

1. Start by sketching the angle



$\cos 240° = -\frac{1}{2}$