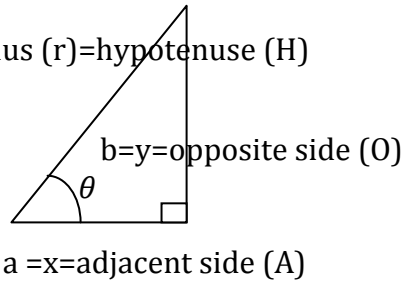
Matthew Harper

Pre-calc, Calc 1 Students
Trigonometry Help Sheet

Basic Relations:



$\sin\theta = \frac{O}{H}$ $\cos\theta = \frac{A}{H}$ $\tan\theta = \frac{sin\theta}{cos\theta} = \frac{\text{O}}{\text{H}} * \frac{\text{H}}{\text{A}} = \frac{\text{O}}{\text{A}}$

$\csc\theta = \frac{1}{\sin\theta}$ $\sec\theta = \frac{1}{\cos\theta}$ flip it over, flip the letter

$\csc\theta = \frac{H}{O}$ $\sec\theta = \frac{H}{A}$ $\cot\theta = \frac{csc\,\theta}{sec\theta} = \frac{H}{O} * \frac{A}{H} = \frac{A}{O}$

Simplified Table of Function Values:

$angle^{\text{r}}$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
angle°	0	30	45	60	90
$\sin\theta$	$\frac{1}{2} * \sqrt{0}$	$\frac{1}{2} * \sqrt{1}$	$\frac{1}{2} * \sqrt{2}$	$\frac{1}{2} * \sqrt{3}$	$\frac{1}{2} * \sqrt{4}$
$\cos\theta$	$\frac{1}{2} * \sqrt{4}$	$\frac{1}{2} * \sqrt{3}$	$\frac{1}{2} * \sqrt{2}$	$\frac{1}{2} * \sqrt{1}$	$\frac{1}{2} * \sqrt{0}$
$\tan\theta$	$\frac{\sqrt{0}}{\sqrt{4}}$	$\frac{\sqrt{1}}{\sqrt{3}}$	$\frac{\sqrt{2}}{\sqrt{2}}$	$\frac{\sqrt{3}}{\sqrt{1}}$	$\frac{\sqrt{4}}{\sqrt{0}}$ (undef.)
$\csc\theta$	$\frac{2}{\sqrt{0}}$ (undef.)	$\frac{2}{\sqrt{1}}$	$\frac{2}{\sqrt{2}}$	$\frac{2}{\sqrt{3}}$	$\frac{2}{\sqrt{4}}$
$\sec\theta$	$\frac{2}{\sqrt{4}}$	$\frac{2}{\sqrt{3}}$	$\frac{2}{\sqrt{2}}$	$\frac{\sqrt{1}}{\sqrt{3}}$	$\frac{\sqrt{0}}{\sqrt{4}}$
$\cot\theta$	$\frac{\sqrt{4}}{\sqrt{0}}$ (undef.)	$\frac{\sqrt{3}}{\sqrt{1}}$	$\frac{\sqrt{2}}{\sqrt{2}}$	$\frac{\sqrt{1}}{\sqrt{3}}$	$\frac{\sqrt{0}}{\sqrt{4}}$

$\sin\theta$ goes as $\frac{1}{2}$ times the square root of 0,1,2,3,4

$\cos\theta$ goes as $\frac{1}{2}$ times the square root of 4,3,2,1,0 ($\sin\theta$ backwards)

$\tan\theta$ cancels the $\frac{1}{2}$ from $\sin\theta$ and $\cos\theta$, leaving their ratio

$\csc\theta$ and $\sec\theta$ each flip over the fraction from the $\sin\theta$ and $\cos\theta$

$\cot\theta$ can be thought of as $\tan\theta$ backwards, or flipped over, or as the ratio of $\csc\theta$ and $\sec\theta$.