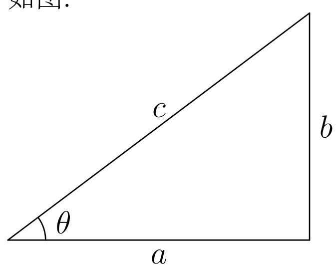
如图.



基本公式列表:

$$
\begin{array}{lll}
\sin(\theta) = \frac{b}{c} & \cos(\theta) = \frac{a}{c} & \tan(\theta) = \frac{b}{a} \\
\csc(\theta) = \frac{1}{\sin(\theta)} = \frac{c}{b} & \sec(\theta) = \frac{1}{\cos(\theta)} = \frac{c}{a} & \cot(\theta) = \frac{1}{\tan(\theta)} = \frac{a}{b}
\end{array}
$$

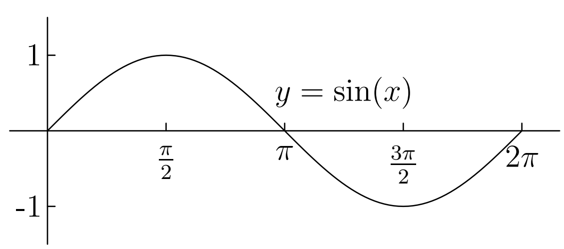
常见三角函数值:

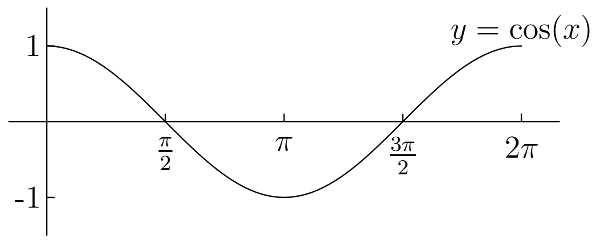
	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tan	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$\star$

求三角函数值步骤:

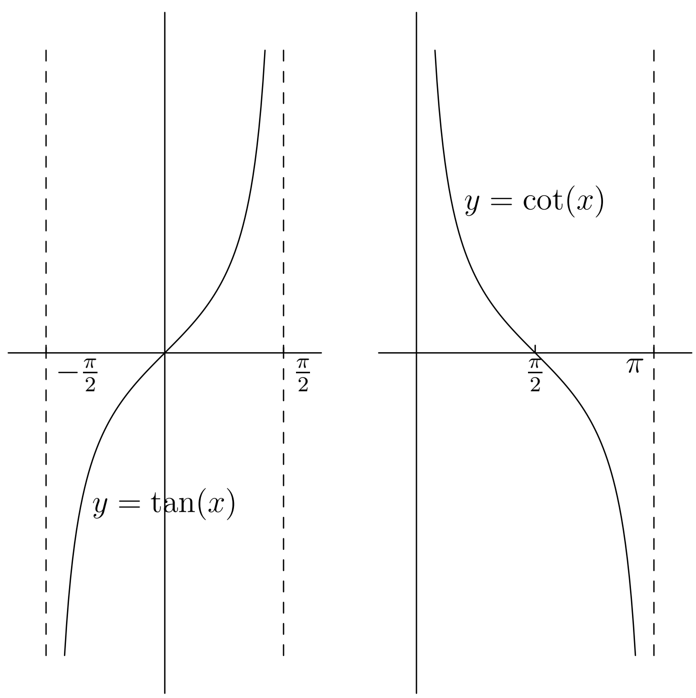
1. 找出角所在象限;
2. 当角在 x/y 轴上, 参考三角函数图像;
3. 如果角不在 x/y 轴上, 找出该角与 x 轴形成的最小角度, 即**参考角**;
4. 当参考角为特殊角时, 参考常见三角函数值表;
5. 利用 ASTC(all/sin/tan/cos) 决定是否需要添加负号.

三角函数图像:

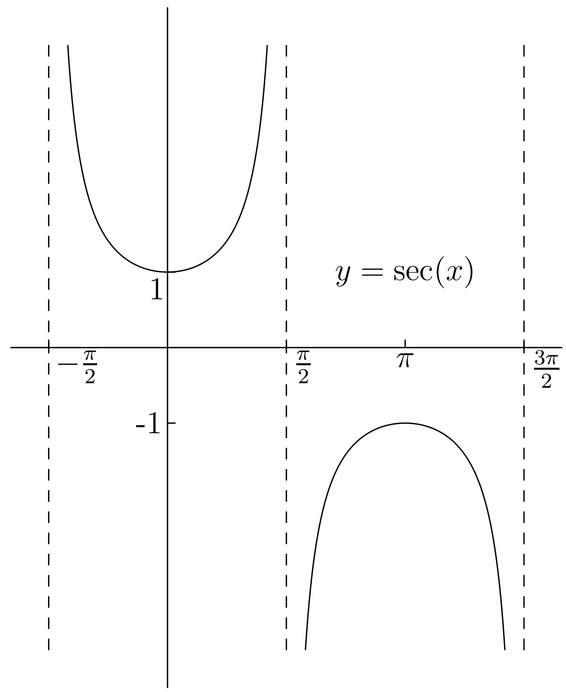


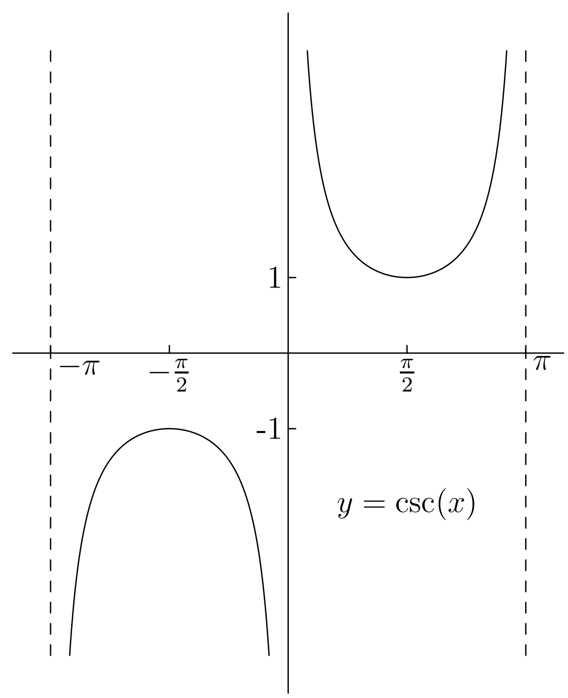


$y = \cos(x)$
1
-1
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π



$-\frac{\pi}{2}$
$\frac{\pi}{2}$
$y = \tan(x)$
$y = \cot(x)$
$\frac{\pi}{2}$
π


$y = \sec(x)$
1
-1
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$


1
-1
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$y = \csc(x)$

毕达哥拉斯定理:

$$\boxed{\cos^2(x) + \sin^2(x) = 1}$$

等式两边除以 $\cos^2(x)$:

$$\boxed{1 + \tan^2(x) = \sec^2(x)}$$

等式两边除以 $\sin^2(x)$:

$$\boxed{\cot^2(x) + 1 = \csc^2(x)}$$

和/差角公式:

$$\boxed{\sin(A + B) = \sin(A)\cos(B) + \cos(A)\sin(B)}$$
$$\boxed{\cos(A + B) = \cos(A)\cos(B) - \sin(A)\sin(B)}$$
$$\boxed{\sin(A - B) = \sin(A)\cos(B) - \cos(A)\sin(B)}$$
$$\boxed{\cos(A - B) = \cos(A)\cos(B) + \sin(A)\sin(B)}$$

倍角公式:

$$\boxed{\sin(2x) = 2\sin(x)\cos(x)}$$
$$\boxed{\cos(2x) = \cos^2(x) - \sin^2(x) = 2\cos^2(x) - 1 = 1 - 2\sin^2(x)}$$

公式汇总:

毕达哥拉斯定理:

$$\boxed{\cos^2(x) + \sin^2(x) = 1}$$
$$\boxed{1 + \tan^2(x) = \sec^2(x)}$$

$$\boxed{\cot^2(x) + 1 = \csc^2(x)}$$

和/差角公式:

$$\boxed{\sin(A+B) = \sin(A)\cos(B) + \cos(A)\sin(B)}$$
$$\boxed{\cos(A+B) = \cos(A)\cos(B) - \sin(A)\sin(B)}$$
$$\boxed{\sin(A-B) = \sin(A)\cos(B) - \cos(A)\sin(B)}$$
$$\boxed{\cos(A-B) = \cos(A)\cos(B) + \sin(A)\sin(B)}$$

倍角公式:

$$\boxed{\sin(2x) = 2\sin(x)\cos(x)}$$
$$\boxed{\cos(2x) = \cos^2(x) - \sin^2(x) = 2\cos^2(x) - 1 = 1 - 2\sin^2(x)}$$