

The Chart

	0°	30°	45°	60°	90°	120°	135°	150°	180°	210°	225°	240°	270°	300°	315°	330°	360°
	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
sin θ	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0
cos θ	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
tan θ	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	und	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	und	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0
csc θ	und	2	$\sqrt{2}$	$\frac{2\sqrt{3}}{3}$	1	$\frac{2\sqrt{3}}{3}$	$\sqrt{2}$	2	und	-2	$-\sqrt{2}$	$-\frac{2\sqrt{3}}{3}$	-1	$-\frac{2\sqrt{3}}{3}$	$-\sqrt{2}$	-2	und
sec θ	1	$\frac{2\sqrt{3}}{3}$	$\sqrt{2}$	2	und	-2	$-\sqrt{2}$	$-\frac{2\sqrt{3}}{3}$	-1	$-\frac{2\sqrt{3}}{3}$	$-\sqrt{2}$	-2	und	2	$\sqrt{2}$	$\frac{2\sqrt{3}}{3}$	1
cot θ	und	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	$-\frac{\sqrt{3}}{3}$	-1	$-\sqrt{3}$	und	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	$-\frac{\sqrt{3}}{3}$	-1	$-\sqrt{3}$	und

Q I: all +
 Q II: sin θ, csc θ +; cos θ, sec θ -; tan θ, cot θ -
 Q III: tan θ, cot θ +; sin θ, csc θ -; cos θ, sec θ -
 Q IV: cos θ, sec θ +; sin θ, csc θ -; tan θ, cot θ -

$$\sin \frac{11\pi}{6} = -\frac{1}{2}$$

$$\cos 225^\circ = -\frac{\sqrt{2}}{2}$$

$$\tan 420^\circ = \tan \frac{-360^\circ}{60^\circ} = \sqrt{3}$$

$$\sec \frac{23\pi}{4} = \sec \frac{7\pi}{4} = \sqrt{2}$$

$$\frac{23\pi}{4} - \frac{8\pi}{4} = \frac{15\pi}{4} - \frac{8\pi}{4} = \frac{7\pi}{4}$$

$$\csc(-1350^\circ) = \csc 90^\circ = 1$$

$$\begin{array}{r} -1350 \\ 360 \\ \hline -990 \\ 360 \\ \hline -630 \\ 720 \\ \hline 90 \end{array}$$

$$\cot\left(-\frac{13\pi}{6}\right) = \cot \frac{11\pi}{6} = -\sqrt{3}$$

$$-\frac{13\pi}{6} + \frac{12\pi}{6} = -\frac{\pi}{6} + \frac{12\pi}{6} = \frac{11\pi}{6}$$

$$\frac{23\pi}{4} \cdot \frac{180}{\pi} = 1035^\circ$$

$$\sec 1035^\circ = \sec 315^\circ = \sqrt{2}$$

$$\begin{array}{r} -360 \\ 675 \\ \hline -360 \\ \hline 315^\circ \end{array}$$