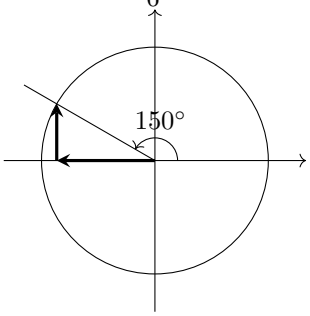
MATH 2A/5A Prep: Trigonometric Values

1. Calculate $\cot\left(\frac{5\pi}{6}\right)$

Solution: $\frac{5\pi}{6}$ is 150° in degree measure. We use the unit circle:

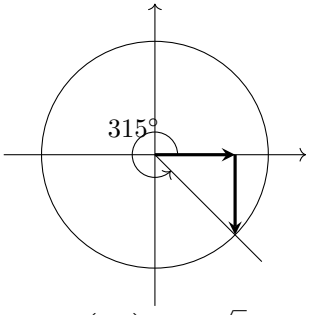


So $\sin\left(\frac{5\pi}{6}\right) = \frac{1}{2}$, $\cos\left(\frac{5\pi}{6}\right) = \frac{-\sqrt{3}}{2}$. So

$$\cot\left(\frac{5\pi}{6}\right) = \frac{\cos\left(\frac{5\pi}{6}\right)}{\sin\left(\frac{5\pi}{6}\right)} = \frac{\frac{-\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}.$$

2. Calculate $\sec\left(\frac{7\pi}{4}\right)$ and $\csc\left(\frac{7\pi}{4}\right)$.

Solution: $\frac{7\pi}{4}$ is 315° in degree measure. We use the unit circle:



So $\sin\left(\frac{7\pi}{4}\right) = -\frac{\sqrt{2}}{2}$, $\cos\left(\frac{7\pi}{4}\right) = \frac{\sqrt{2}}{2}$. Then

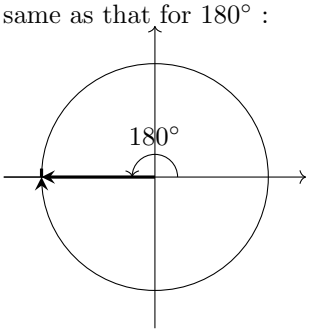
$$\sec\left(\frac{7\pi}{4}\right) = \frac{1}{\cos\left(\frac{7\pi}{4}\right)} = \frac{1}{\frac{\sqrt{2}}{2}} = \sqrt{2}.$$

And

$$\csc\left(\frac{7\pi}{4}\right) = \frac{1}{\sin\left(\frac{7\pi}{4}\right)} = \frac{1}{-\frac{\sqrt{2}}{2}} = -\sqrt{2}.$$

3. Calculate $\sin(3\pi)$ and $\cos(3\pi)$.

Solution: $3\pi = 2\pi + \pi$ is $540^\circ = 360^\circ + 180^\circ$ in degree measure. The unit circle figure for 540° is same as that for 180° :



So

$$\sin(3\pi) = 0.$$

And

$$\cos(3\pi) = -1.$$