

Unit Circle

Complete the following exercises without using a calculator.

1. Determine the exact value for each of the following expressions. If a value is undefined, then write DNE.

a) $\sin 225^\circ$

b) $\cos\left(-\frac{7\pi}{6}\right)$

c) $\tan\frac{5\pi}{3}$

d) $\cos \pi$

e) $\sin\left(\frac{15\pi}{6}\right)$

f) $\tan\left(-\frac{3\pi}{2}\right)$

g) $\sec(300^\circ)$

h) $\csc\left(\frac{2\pi}{3}\right)$

i) $\cos 600^\circ$

j) $\cot\left(-\frac{5\pi}{6}\right)$

2. If $\tan \theta = \frac{12}{5}$ and $\sin \theta < 0$, determine the values of $\cos \theta$ and $\csc \theta$.

3. Given that $\sec \theta = \frac{13}{5}$ and $\cot \theta > 0$, find $\tan \theta$ and $\sin \theta$.

4. Find any angles between 0 and 2π that satisfy the equation $\sin \theta = -\frac{1}{2}$.