7.4 5

Exact Values of Trig Functions.

Key

Determine the exact value of each trigonometric function.

1) $\sin 225^\circ = \frac{-\sqrt{2}}{2}$

2) $\cos 150^\circ = \frac{-\sqrt{3}}{2}$

3) $\tan 60^\circ = \frac{\sin 60^\circ}{\cos 60^\circ} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

4) $\sin \frac{\pi}{6} = \frac{1}{2}$

5) $\sec \frac{2\pi}{3} =$

Think cos! $\cos \frac{2\pi}{3} = -\frac{1}{2}$, so

$\sec \frac{2\pi}{3} = -\frac{2}{1} = -2$

6) $\cot \frac{5\pi}{3} = \frac{\cos \frac{5\pi}{3}}{\sin \frac{5\pi}{3}} = \frac{\frac{1}{2}}{\frac{-\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{-\sqrt{3}}{3}$

7) $\tan 90^\circ =$ undefined

8) $\cos \pi = -1$

9) $\csc \frac{3\pi}{4} =$

$\sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2}$, so

$\csc \frac{3\pi}{4} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$

10) $\sin 2\pi = 0$

11) $\cos -30^\circ =$

same as $\cos 330^\circ = \frac{\sqrt{3}}{2}$

12) $\sec 585^\circ = \sec 225^\circ = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = -\sqrt{2}$

think cos! $\cos 225^\circ = \frac{-\sqrt{2}}{2}$, so

13) $\cot 180^\circ =$ undefined

14) $\sin \frac{\pi}{2} = 1$

15) $\cos 270^\circ = 0$

16) $\sec \frac{7\pi}{6} =$

$\cos \frac{7\pi}{6} = \frac{-\sqrt{3}}{2}$, so $\sec \frac{7\pi}{6} = -\frac{2}{\sqrt{3}} = \frac{-2\sqrt{3}}{3}$