

# The Inverse Cosine and Inverse Sine; Other Inverse Functions

Evaluate each of the following expressions.

1.  $\sin^{-1}\left(\sin \frac{2\pi}{3}\right) = \frac{\pi}{3}$

3.  $\cos^{-1}\left(\cos \frac{7\pi}{6}\right) = \frac{5\pi}{6}$

5.  $\cos^{-1}\left(\cos \frac{13\pi}{6}\right) = \frac{\pi}{6}$

7.  $\sin^{-1}\left[\cos\left(-\frac{\pi}{4}\right)\right] = \frac{\pi}{4}$

9.  $\cos^{-1}\left(\sin \frac{7\pi}{6}\right) = \frac{2\pi}{3}$

11.  $\cos\left(\sin^{-1}\frac{15}{17}\right) = \frac{8}{17}$

13.  $\cos\left[\sin^{-1}\left(-\frac{3}{5}\right)\right] = \frac{4}{5}$

15.  $\sin\left(\csc^{-1}\frac{6}{5}\right) = \frac{5}{6}$

17.  $\sec\left(\cot^{-1}\frac{12}{5}\right) = \frac{13}{12}$

19.  $\csc\left[\tan^{-1}\left(-\frac{15}{8}\right)\right] = -\frac{17}{15}$

21.  $\tan\left[\sec^{-1}\left(-\frac{\sqrt{13}}{3}\right)\right] = -\frac{2}{3}$

23.  $\csc\left[\tan^{-1}\left(-\frac{1}{3}\right)\right] = -\sqrt{10}$

2.  $\cos^{-1}\left[\cos\left(-\frac{\pi}{3}\right)\right] = \frac{\pi}{3}$

4.  $\sin^{-1}\left(\sin \frac{5\pi}{4}\right) = -\frac{\pi}{4}$

6.  $\sin^{-1}\left(\sin \frac{17\pi}{6}\right) = \frac{\pi}{6}$

8.  $\cos^{-1}\left[\sin\left(-\frac{\pi}{4}\right)\right] = \frac{3\pi}{4}$

10.  $\sin^{-1}\left(\cos \frac{7\pi}{6}\right) = -\frac{\pi}{3}$

12.  $\sin\left(\cos^{-1}\frac{5}{13}\right) = \frac{12}{13}$

14.  $\sin\left(\cos^{-1}\frac{\sqrt{3}}{3}\right) = \frac{\sqrt{6}}{3}$

16.  $\cot\left(\tan^{-1}\frac{1}{10}\right) = 10$

18.  $\tan\left(\csc^{-1}\frac{5}{3}\right) = \frac{3}{4}$

20.  $\tan\left[\sec^{-1}\left(-\frac{13}{12}\right)\right] = -\frac{5}{12}$

22.  $\cos\left[\cot^{-1}\left(-\frac{3}{2}\right)\right] = -\frac{3\sqrt{13}}{13}$

24.  $\cot\left[\sin^{-1}\left(-\frac{\sqrt{10}}{10}\right)\right] = -3$

~~25.  $\cos\left[2 \sin^{-1}\left(-\frac{1}{6}\right)\right] = \right.$~~

~~26.  $\sin\left[2 \cos^{-1}\left(-\frac{5}{13}\right)\right] = \right.$~~

~~27.  $\sin\left[\cos^{-1}\left(-\frac{\sqrt{5}}{5}\right) + \tan^{-1}\left(-\frac{1}{3}\right)\right] = \right.$~~

~~28.  $\cos\left[\sec^{-1}\left(-\frac{5\sqrt{2}}{2}\right) + \sin^{-1}\left(-\frac{\sqrt{3}}{10}\right)\right] = \right.$~~