Practice Worksheet: Inverse Trig Functions

You should complete all of these problems ***without a calculator*** in order to prepare for the Midterm which is a no-calculator exam.

1. Find the exact value of each of the following expressions; do not use a calculator. Be sure to use proper notation to ***directly communicate*** what the given expressions equal.

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

b. $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$

c. $\sin^{-1}\left(-\frac{1}{2}\right)$

d. $\cos^{-1}(0)$

e. $\tan^{-1}\left(\sqrt{3}\right)$

f. $\tan^{-1}(-1)$

g. $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$

2. Find the exact value of each of the following expressions; do not use a calculator. Be sure to use proper notation to ***directly communicate*** what the given expressions equal.

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

b. $\cos\left(\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)\right)$

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

d. $\sin^{-1}\left(\sin\left(\frac{4\pi}{3}\right)\right)$

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

3. Find the exact value of each of the following expressions; do not use a calculator. Be sure to use proper notation to ***directly communicate*** what the given expressions equal.

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

b. $\sin\left(\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right)$

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

d. $\cos^{-1}\left(\tan\left(\frac{3\pi}{4}\right)\right)$

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

f. $\sin\left(\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)\right)$

4. Find the exact value of each of the following expressions; do not use a calculator. Be sure to use proper notation to ***directly communicate*** what the given expressions equal.

a. $\sin^{-1}\left(\sin\left(\frac{7\pi}{8}\right)\right)$

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

c. $\sin^{-1}\left(\sin\left(\frac{9\pi}{7}\right)\right)$