

$\sin y = x$  means  $\sin^{-1} x = y$  where  $-1 \leq x \leq 1$  and  $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$  note: quadrant I and IV

$\tan y = x$  means  $\tan^{-1} x = y$  where  $-\infty \leq x \leq \infty$  and  $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$  note: quadrant I and IV

$\cos y = x$  means  $\cos^{-1} x = y$  where  $-1 \leq x \leq 1$  and  $0 \leq y \leq \pi$  note: quadrant I and II

1. Evaluate without a calculator giving exact values. **Draw a sketch to illustrate each one.**

If  $\sin \theta = x$ , then  $\sin^{-1} x = \theta$ .      Thus if  $\sin \frac{\pi}{6} = \frac{1}{2}$ , then  $\sin^{-1}\left(\frac{1}{2}\right) = \frac{\pi}{6}$ .

a.  $\sin\left(\frac{\pi}{2}\right) = \underline{\hspace{2cm}}$       so  $\sin^{-1}(1) = \underline{\hspace{2cm}}$

b.  $\tan\left(\frac{\pi}{3}\right) = \underline{\hspace{2cm}}$       so  $\tan^{-1}(\sqrt{3}) = \underline{\hspace{2cm}}$

c.  $\cos\left(\frac{3\pi}{4}\right) = \underline{\hspace{2cm}}$       so  $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right) = \underline{\hspace{2cm}}$

d.  $\tan\left[\cos^{-1}\left(-\frac{1}{2}\right)\right] = \underline{\hspace{2cm}}$

2. Evaluate without a calculator giving an exact value. Draw and label a right triangle to illustrate how to solve this problem.

$\cot\left[\cos^{-1}\left(-\frac{2}{3}\right)\right] = \underline{\hspace{2cm}}$

6. Use a calculator (set in radian mode) to find the value of each expression. Show how you are calculating each of these and round each answer to two decimal places.

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

b.  $\csc^{-1}\left(\frac{4}{3}\right)$