

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

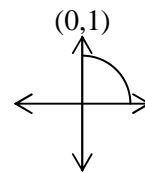
$y = \tan^{-1} x$ means $x = \tan y$ where $-\infty \leq x \leq \infty$ and $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$ notice: quadrant I and IV

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

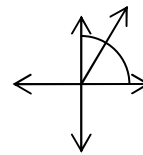
1. Evaluate without a calculator giving exact values, since these angles are “special angles”. Draw a sketch of the angle and label the point on a unit circle to illustrate each one.

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

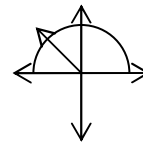
a. $\sin\left(\frac{\pi}{2}\right) = \underline{\hspace{2cm}}$ so $\sin^{-1}(1) = \underline{\hspace{2cm}}$



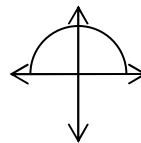
b. $\tan\left(\frac{\pi}{3}\right) = \underline{\hspace{2cm}}$ so $\tan^{-1}(\sqrt{3}) = \underline{\hspace{2cm}}$



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

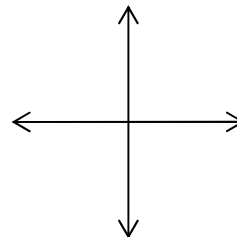


d. $\tan\left[\cos^{-1}\left(-\frac{1}{2}\right)\right] = \tan\left[\underline{\hspace{1cm}}\right] = \underline{\hspace{2cm}}$



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

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



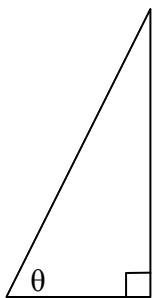
6. Use a calculator (set in radian mode) to find the value of each expression. Show how you are calculating each of these and round each answer to two decimal places.

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

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

Finding the exact value of expressions involving inverse trig functions:

7. Find other trig functions of the angle θ in the right triangle show below, if $\theta = \sin^{-1}\left(\frac{12}{13}\right)$.



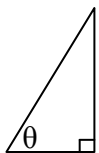
Recall that if $\theta = \sin^{-1}\left(\frac{12}{13}\right)$, then $\sin \theta = \frac{12}{13}$.

Find the exact value of $\tan\left(\sin^{-1}\left(\frac{12}{13}\right)\right) =$

Find the exact value of $\cos\left(\sin^{-1}\left(\frac{12}{13}\right)\right) =$

Using your calculator, find the approximate value of θ .

8. Find other trig functions of the angle θ in the right triangle show below, if $\theta = \cos^{-1}\left(\frac{3}{5}\right)$.



Recall that if $\theta = \cos^{-1}\left(\frac{3}{5}\right)$, then $\cos \theta = \frac{3}{5}$.

Find the exact value of $\sin\left(\cos^{-1}\left(\frac{3}{5}\right)\right) =$

Find the exact value of $\tan\left(\cos^{-1}\left(\frac{3}{5}\right)\right) =$

Using your calculator, find the approximate value of θ .

9. Find the exact value of $\sin\left(\cos^{-1}\left(-\frac{3}{5}\right)\right) =$

10. Find the exact value of $\cos\left(\sin^{-1}\left(-\frac{3}{5}\right)\right) =$

