

1. Find each value.

$$\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right) =$$

$$\cos^{-1} 1 =$$

$$\tan^{-1}(-1) =$$

$$\tan^{-1}\frac{\sqrt{3}}{3} =$$

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

$$\cos^{-1}(\cos \pi) =$$

$$\cos^{-1}\left(\cos\frac{7\pi}{2}\right) =$$

2. Find the exact value of the expression.

$$\csc\left(\cos^{-1}\frac{7}{25}\right)$$

3. Rewrite the expression as an algebraic expression in x .

$$\tan(\cos^{-1} x)$$

Q: A man rode his horse into town on Tuesday. Two days later he rode home on Tuesday. How is this possible?

4. Find the exact value in radians without a calculator.

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

b) $\sin^{-1} 0$

c) $\sin^{-1}\frac{\pi}{2}$

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

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

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

g) $\tan^{-1}\sqrt{3}$

h) $\sec^{-1}\sqrt{2}$ (make sure your output is between 0 and π)

i) $\sec^{-1}\left(-\frac{2\sqrt{3}}{3}\right)$ (make sure your output is between 0 and π)

j) $\csc^{-1}\left(-\frac{2}{\sqrt{3}}\right)$ (make sure your output is between $-\frac{\pi}{2}$ and $\frac{\pi}{2}$)

5. Find the exact value without a calculator.

a) $\sin^{-1}\left(\sin\frac{\pi}{3}\right)$

b) $\tan^{-1}\left(\tan\left(-\frac{\pi}{6}\right)\right)$

c) $\tan^{-1}\left(\tan\frac{7\pi}{6}\right)$

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

e) $\tan(\cos^{-1} 0)$

f) $\cos(\sin^{-1} 1)$

g) $\cot\left(\sin^{-1}\left(-\frac{2}{5}\right)\right)$

h) $\sec\left(\tan^{-1}\frac{7}{4}\right)$

i) $\csc\left(\cos^{-1}\frac{1}{5}\right)$

j) $\cos(\tan^{-1} 1)$

6. Rewrite each expression as an algebraic expression in x .

a) $\sin(\tan^{-1} x)$

b) $\tan(\sin^{-1} x)$

c) $\cos(\sin^{-1} x)$

Optional exercises from the Sullivan book if you'd like more practice:
7.1 (p.450) #15-57 odd
7.2 (p.457) #9-43 odd, 57, 59, 65