

Inverse Trigonometric Sine, Cosine, Tangent

$$f(x) = \sin x$$

$$f^{-1}(x) = \cos x$$

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

$$-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$$

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

$$0 \leq x \leq \pi$$

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

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

$$\sin^{-1}(0) =$$

$$\cos^{-1}(0) =$$

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

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

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

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

$$f^{-1}(f(x)) = \sin^{-1}(\sin x) = x$$

$$\text{where } -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$$

$$\sin^{-1}\left(\sin \frac{-\pi}{12}\right) =$$

$$\cos^{-1}\left(\cos \frac{-\pi}{12}\right) =$$

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

$$\cos(\cos 1.5) =$$

$$f(x) = 4 \tan x - 1 \quad -\frac{\pi}{2} \leq x \leq \frac{\pi}{2} \quad \text{range}(-\infty, \infty)$$

$$f(x) = 3 \sin(2x + 1) \quad -\frac{1}{2} - \frac{\pi}{4} \leq x \leq -\frac{1}{2} + \frac{\pi}{4}$$

$$3 \sin^{-1} x = -\pi$$

$$5 \cos^{-1} x + 2\pi = 2 \cos^{-1} x + 2\pi$$

Inverse Tangent

$$f(x) = \tan x$$

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

$$\tan^{-1}(0) =$$

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

$$\tan^{-1}(-\sqrt{3}) =$$

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

$$f^{-1}(f(x)) = \tan^{-1}(\tan x) = x \quad \text{where } -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$$

$$\tan[\tan^{-1}(4)] =$$

$$\tan^{-1}\left[\tan\left(\frac{-3\pi}{7}\right)\right] =$$

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

$$f(x) = 4 \tan(x+1) + 4; -1 - \frac{\pi}{2} \leq x \leq \frac{\pi}{2} - 1$$

$$6 \tan^{-1} x = \pi$$

Inverse Secant, Cosecant, Cotangent

Secant Function

$$f(x) = \sec x$$

Cosecant Function

$$f(x) = \csc x$$

Cotangent Function

$$f(x) = \cot x$$

$$\cot^{-1}(-\sqrt{3}) =$$

$$\csc^{-1}\left(-\frac{2\sqrt{3}}{3}\right) =$$

$$\cot^{-1}(-2) =$$

$$\sin[\tan^{-1}(-3)]$$

$$\sin[\cot^{-1} u]$$

$$\cos[\sec^{-1} u]$$

$$f(x) = \sin x \quad -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$$

$$g(x) = \cos x \quad 0 \leq x \leq \pi$$

$$h(x) = \tan x \quad -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$$

$$g^{-1}\left(f\left(\frac{7\pi}{4}\right)\right) =$$

$$h\left(f^{-1}\left(-\frac{2}{5}\right)\right) =$$

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

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