

7.6 Derivatives of the Inverse Trigonometric Functions

$$\frac{d}{dx} \sin^{-1} x = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx} \cos^{-1} x = -\frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx} \tan^{-1} x = \frac{1}{1+x^2}$$

Prove: $\frac{d}{dx} \sin^{-1} x = \frac{1}{\sqrt{1-x^2}}$

Differentiate: $y = \sin^{-1}(1-x^2)$

$$y = x \tan^{-1} \sqrt{x}$$

If $y = \tan^{-1}\left(\frac{x}{y}\right)$, find $\frac{dy}{dx}$

Differentiate $y = \cos^{-1}(\sin x)$ and use the result to sketch the graph.