

4.6-Inverse Trig Functions and their Derivatives

sin, cos tan and one-to-one functions:

$y = \sin^{-1} x$ (or $\arcsin x$) if and only if

$y = \cos^{-1} x$ if and only if

$y = \tan^{-1} x$ if and only if

Derivative of \sin^{-1} :

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

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

$$\frac{d}{dx} \sec^{-1} x =$$

Examples:

Find the exact values of each of the following:

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

b) $\arcsin(-1)$

Compute $\cos(\sin^{-1}(\frac{1}{3}))$

Compute $\sin(2 \arcsin(\frac{3}{5}))$

Compute $\lim_{x \rightarrow \infty} \tan^{-1}\left(\frac{1-x^3}{2x^2-x}\right)$

Find the derivative of $f(x) = x \arctan(2x) - \frac{1}{4} \ln(1+4x^2)$