

Derivatives of Inverse Trig Functions

Goal:

- Understands how to find the derivative of $\arcsin x$ and $\arctan x$

Terminology:

- "Arc"-function

Discussion: What is $\sin(\arcsin x)$? What is $\cos(\arcsin x)$?

We are going to determine the derivative of \arcsin and \arctan (arguably the most important inverse trig functions)

Example: Find

$$\frac{d}{dx} \arcsin x$$

Practice: Find

$$\frac{d}{dx} \arctan x$$

Practice: Determine $\frac{dy}{dx}$ for the following function

$$y = \arcsin(\sqrt{x}) + \arctan(2x)$$

Example: Solve the antiderivative

$$\int \frac{3}{2 + 4x^2} dx$$

Practice: Solve the antiderivative

$$\int \frac{e^x}{\sqrt{1 - e^{2x}}} dx$$

Practice: Solve the antiderivative

$$\int \frac{\sqrt{x}}{1 + x^3} dx$$

Practice Problems: 7.6 # 1 (do what you need but skip $\cos^{-1} x$), 2-5

11.2 # 3cde

11.3 # 3r