Inverse Trigonometric Functions

$$\frac{d}{dx}(\arcsin u) = \frac{1}{\sqrt{1-u^2}}\frac{du}{dx}\,, \quad (|u| < 1)\,,$$

$$\frac{d}{dx}(\arccos u) = -\frac{1}{\sqrt{1-u^2}}\frac{du}{dx}\,, \quad (|u| < 1)\,,$$

$$\frac{d}{dx}(\arctan u) = \frac{1}{1+u^2}\frac{du}{dx}\,.$$

Example 1. Differentiate $y = \arcsin 2x^3$ with respect to x .

Example 2. Differentiate $v = (\arctan t)^2$ with respect to t.

Example 3. Differentiate $y = \dfrac{\arccos 2x}{x}$ with respect to x.