

Trigonometric Derivatives

$$\frac{d(\sin u)}{dx} = \cos u \frac{du}{dx} \quad (1)$$

$$\frac{d(\cos u)}{dx} = -\sin u \frac{du}{dx} \quad (2)$$

$$\frac{d(\tan u)}{dx} = \sec^2 u \frac{du}{dx} \quad (3)$$

$$\frac{d(\cot u)}{dx} = \csc^2 u \frac{du}{dx} \quad (4)$$

$$\frac{d(\sec u)}{dx} = \tan u \sec u \frac{du}{dx} \quad (5)$$

$$\frac{d(\csc u)}{dx} = -\cot u \csc u \frac{du}{dx} \quad (6)$$

$$\frac{d(\arcsin u)}{dx} = \frac{1}{\sqrt{1-u^2}} \frac{du}{dx} \quad (7)$$

$$\frac{d(\arccos u)}{dx} = \frac{-1}{\sqrt{1-u^2}} \frac{du}{dx} \quad (8)$$

$$\frac{d(\arctan u)}{dx} = \frac{1}{1+u^2} \frac{du}{dx} \quad (9)$$

$$\frac{d(\operatorname{arccot} u)}{dx} = \frac{-1}{1+u^2} \frac{du}{dx} \quad (10)$$

$$\frac{d(\operatorname{arcsec} u)}{dx} = \frac{1}{u\sqrt{1-u^2}} \frac{du}{dx} \quad (11)$$

$$\frac{d(\operatorname{arccsc} u)}{dx} = \frac{-1}{u\sqrt{1-u^2}} \frac{du}{dx} \quad (12)$$

$$\frac{d(\sinh u)}{dx} = \cosh u \frac{du}{dx} \quad (13)$$

$$\frac{d(\cosh u)}{dx} = \sinh u \frac{du}{dx} \quad (14)$$

$$\frac{d(\tanh u)}{dx} = \operatorname{sech}^2 u \frac{du}{dx} \quad (15)$$

$$\frac{d(\operatorname{coth} u)}{dx} = -\operatorname{csch}^2 u \frac{du}{dx} \quad (16)$$

$$\frac{d(\operatorname{sech} u)}{dx} = -\operatorname{sech} u \tanh u \frac{du}{dx} \quad (17)$$

$$\frac{d(\operatorname{arcsinh} u)}{dx} = \frac{1}{\sqrt{1+u^2}} \frac{du}{dx} \quad (18)$$

$$\frac{d(\operatorname{arccosh} u)}{dx} = \frac{1}{\sqrt{u^2 - 1}} \frac{du}{dx} \quad (19)$$

$$\frac{d(\operatorname{arctanh} u)}{dx} = \frac{1}{1 - u^2} \frac{du}{dx} \quad (20)$$

$$\frac{d(\operatorname{arcoth} u)}{dx} = \frac{1}{u^2 - 1} \frac{du}{dx} \quad (21)$$

$$\frac{d(\operatorname{arcsech} u)}{dx} = \frac{-1}{u\sqrt{1 - u^2}} \frac{du}{dx} \quad (22)$$

$$\frac{d(\operatorname{arccsch} u)}{dx} = \frac{-1}{|u|\sqrt{1 + u^2}} \frac{du}{dx} \quad (23)$$