

Let  $u$  be a differentiable function of  $x$ ...

$$\frac{d}{dx} [\arcsin u] = \frac{u'}{\sqrt{1-u^2}}$$

$$\frac{d}{dx} [\arccos u] = \frac{-u'}{\sqrt{1-u^2}}$$

$$\frac{d}{dx} [\arctan u] = \frac{u'}{1+u^2}$$

$$\frac{d}{dx} [\operatorname{arccot} u] = \frac{-u'}{1+u^2}$$

$$\frac{d}{dx} [\operatorname{arcsec} u] = \frac{u'}{|u| \sqrt{u^2-1}}$$

$$\frac{d}{dx} [\operatorname{arccsc} u] = \frac{-u'}{|u| \sqrt{u^2-1}}$$

Differentiate the following functions.

$$f(x) = \arcsin(3x)$$

$$f(x) = \arccos(2x)$$

Differentiate the following functions.

$$f(x) = \arctan(3x + 1)$$

$$f(x) = \arcsin(e^{3x})$$

Differentiate the following functions.

$$f(x) = (\arccos(2x))^2$$

Differentiate the following functions.

$$f(x) = x^2(\arctan(x))$$

Differentiate the following functions.

$$f(x) = \arcsin 2x + \arccos 2x$$

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