Derivatives of Inverse Functions

Formulas

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

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

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

1. Find the derivative of the function
(similar to p.180 #21-46)

$$f(x) = arc\sec(x^2 - 3x)$$

2. Find the derivative of the function
(similar to p.180 #21-46)

$$h(x) = x^3 \arcsin(4x)$$

3. Find the derivative of the function
(similar to p.180 #21-46)

$$f(x) = \arcsin x + \arctan x$$

4. Find the derivative of the function
(similar to p.180 #21-46)

$$y = x^3 arc\csc(x^2 - 1) - \frac{1}{2}\ln(3x^2 - 4)$$

5. Find the derivative of the function
(similar to p.180 #21-46)

$$y = 9\arcsin\frac{x}{3} - x\sqrt{9 - x^2}$$

6. Find dy/dx at the given point for the equation
(similar to p.180 #17-20)

$$2x\arctan x = -3 + e^y, \quad \left(1, \ln\left(\frac{\pi}{2} + 3\right)\right)$$

7. Find an equation of the tangent line to the graph of f at the given point.
(similar to p.180 #13-16)

$$f(x) = arc\cot x, \quad \left(1, \frac{\pi}{4}\right)$$