Name: _____

Inverse Trigonometric Function Differentiation

1) Find the derivative of each function.

    1) $f(x) = \tan^{-1}\left(\dfrac{3x}{5}\right)$ 2) $f(x) = \tan^{-1}\left(\dfrac{x}{3}\right)$

    3) $f(x) = \sin^{-1}\left(\dfrac{2x}{3}\right)$ 4) $f(x) = \sin^{-1}\left(\dfrac{x}{5}\right)$

    5) $f(x) = \tan^{-1}\left(\dfrac{x+3}{4}\right)$ 6) $f(x) = \tan^{-1}\left(\dfrac{3x+7}{8}\right)$

    7) $f(x) = \dfrac{\sin x}{\sin^{-1} x}$ 8) $f(x) = \tan^{-1}\left(\dfrac{2x}{1+x^2}\right)$

    9) $f(x) = \tan^{-1}\left(\dfrac{2x-2}{5}\right)$ 10) $f(x) = \cos^{-1}(2x+1)$

    11) $f(x) = \cos^{-1}(3-2x)$ 12) $f(x) = \cos^{-1}(1-x)$

2) Find the instantaneous rate of change of the function.

    1. $f(x) = 3\cos^{-1}\sqrt{3x}$

    2. $f(x) = \cos(\arcsin x)$

    3. $f(x) = x\arctan 3x$