

44. $f(x) = \operatorname{arcsin} 2x$

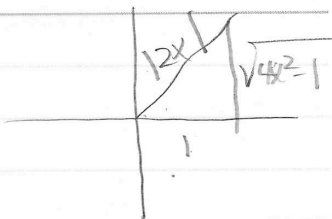
$y = \operatorname{arcsin} 2x$

$\sec y = 2x$

$\sec y \tan y \frac{dy}{dx} = 2$

$\frac{dy}{dx} = \frac{2}{|2x| \sqrt{4x^2 - 1}}$

$\frac{dy}{dx} = \frac{1}{|x| \sqrt{4x^2 - 1}}$



* 45. $f(x) = \arctan \frac{x}{a}$

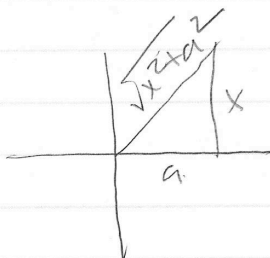
$y = \arctan \frac{x}{a}$

$\tan y = \frac{x}{a}$

$\sec^2 y \frac{dy}{dx} = \frac{1}{a}$

$\frac{dy}{dx} = \frac{1}{a \sec^2 y}$

$\frac{dy}{dx} = \frac{1}{a \left(\frac{\sqrt{x^2 + a^2}}{a} \right)^2}$
 $= \frac{1}{\frac{x^2 + a^2}{a}}$
 $= \frac{a}{x^2 + a^2}$



46. $f(x) = \arctan \sqrt{x}$

$y = \arctan \sqrt{x}$

$\tan y = \sqrt{x}$

$\sec^2 y \frac{dy}{dx} = \frac{1}{2} x^{-1/2}$

$\frac{dy}{dx} = \frac{1}{2} x^{-1/2}$

$= \frac{\sec^2 y}{x^{-1/2}}$
 $= \frac{1}{2(\sqrt{1+x})^2}$

$= \frac{1}{2\sqrt{x}(1+x)}$

