

If $y = x \sin^{-1}(3x) + \sec^{-1}(5x) - \tan^{-1}(7x+1)$ find y' .

$$\frac{d}{dx} (\sin^{-1} u) = \frac{1}{\sqrt{1-u^2}} \cdot \frac{du}{dx}$$

$$\frac{d}{dx} (\sec^{-1} u) = \frac{1}{|u| \sqrt{u^2-1}} \frac{du}{dx}$$

$$\frac{d}{dx} (\tan^{-1} u) = \frac{1}{1+u^2} \cdot \frac{du}{dx} \quad \text{So}$$

$$y' = x \cdot \frac{1}{\sqrt{1-9x^2}} \cdot 3 + \sin^{-1} 3x + \frac{1}{|5x| \cdot \sqrt{25x^2-1}} \cdot 5 \\ - \frac{1}{1+(7x+1)^2} \cdot 7$$