

October 13, '10

$$\frac{d}{dx} \left(\frac{\operatorname{arcsec}(1+x^2)}{\operatorname{arctan}(1-5x)} \right)$$

$$\begin{aligned} &= \left(\frac{d}{dx} \operatorname{arcsec}(1+x^2) \right) (\operatorname{arctan}(1-5x)) - (\operatorname{arcsec}(1+x^2)) \left(\frac{d}{dx} \operatorname{arctan}(1-5x) \right) \\ &= \frac{(\operatorname{arctan}(1-5x))^2}{(1+x^2)^2} \end{aligned}$$

$$\begin{aligned} &= \frac{1}{(1+x^2)^2} \left(\frac{d}{dx}(1+x^2) \right) (\operatorname{arctan}(1-5x)) - (\operatorname{arcsec}(1+x^2)) \frac{1}{1+(1-5x)^2} \left(\frac{d}{dx}(1-5x) \right) \\ &= (\operatorname{arctan}(1-5x))^2 \end{aligned}$$

$$\begin{aligned} &= \frac{2x}{(1+x^2)^2} \operatorname{arctan}(1-5x) + \frac{5}{1+(1-5x)^2} \operatorname{arcsec}(1+x^2) \\ &= (\operatorname{arctan}(1-5x))^2 \end{aligned}$$

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