

1- Let $f(x) = \ln(1 + e^{2x})$. Find the value of $f'(0)$?

2- Given $\ln(x + y) = \tan^{-1}(xy)$. Find $\frac{dy}{dx}\bigg|_{x=0}$?

3- Let $y = \sqrt{\frac{x-1}{x^4+1}}$. Use logarithmic differentiation to find $\frac{dy}{dx}$?

4- A particle moves according to the following equation $s = e^{-t/2}$, where s is measured in seconds and in feet. When is the particle speeding up?