

Calcola le seguenti derivate:

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

$$y' = \frac{1}{2}(1-x^2)^{-\frac{1}{2}}(-2x) = -\frac{x}{\sqrt{1-x^2}}$$

$$y = \frac{1}{\cos x} + \sin x (1 - \tan x)$$

$$y' = -\frac{-\sin x}{\cos^2 x} + \cos x - \cos x \tan x - \frac{\sin x}{\cos^2 x} = \cos x - \sin x$$

$$y = (2^x)^{x^2} = 2^{x^3}$$

$$y' = 3x^2 \cdot 2^{x^3} \cdot \ln 2$$

$$y = \sqrt{\tan 3x^2} = (\tan 3x^2)^{\frac{1}{2}}$$

$$y' = \frac{1}{2}(\tan 3x^2)^{-\frac{1}{2}} \cdot \frac{1}{\cos^2 3x^2} \cdot 6x = \frac{3x}{\cos^2 3x^2 \sqrt{\tan 3x^2}}$$

$$y = \frac{\ln(x+1)^2}{2e^x} = \frac{\ln(x+1)}{e^x}$$

$$y' = \frac{\frac{1}{x+1} \cdot e^x - e^x \ln(x+1)}{(e^x)^2} = \frac{1 - (x+1) \ln(x+1)}{(x+1) e^x}$$

$$y = \pi^x + x^\pi$$

$$y' = \pi^x \ln \pi + \pi x^{\pi-1}$$

$$y = 2(\sqrt{x})^\pi = 2x^{\frac{\pi}{2}}$$

$$y' = 2 \cdot \frac{\pi}{2} \cdot x^{\frac{\pi}{2}-1} = \pi \sqrt{x^{\pi-2}}$$

$$y = e^{\cos \frac{1}{x}}$$

$$y' = \frac{1}{x^2} \cdot \sin \frac{1}{x} \cdot e^{\cos \frac{1}{x}}$$

$$y = \ln^2(x^3 + 3x)$$

$$y' = 2 \frac{3x^2 + 3}{x^3 + 3x} \ln(x^3 + 3x)$$

$$y = \ln \sqrt{\frac{1-\cos x}{1+\cos x}} = \frac{1}{2} \ln \frac{1-\cos x}{1+\cos x}$$

$$y' = \frac{1}{2} \cdot \frac{1+\cos x}{1-\cos x} \cdot \frac{\sin x (1+\cos x) + \sin x (1-\cos x)}{(1+\cos x)^2} = \frac{1}{2} \cdot \frac{2 \sin x}{1-\cos^2 x} = \frac{1}{\sin x}$$