$$\frac{d}{dx}\frac{\sqrt{x-1}}{\tan x^2} = \frac{1}{\tan^2 x^2}\left(\frac{1}{2}(x-1)^{-1/2}\tan x^2 - \sqrt{x-1}\frac{2x}{\cos^2 x^2}\right)$$

$$\frac{d}{dt}\ln(\sin t)\,e^{\cos 2t} = e^{\cos 2t}\frac{d}{dt}\ln(\sin t) + \ln(\sin t)\frac{d}{dt}e^{\cos 2t} = e^{\cos 2t}\frac{\cos t}{\sin t} + \ln(\sin t)\,e^{\cos 2t}\,(-2\sin(2t))$$