

1. Find the derivative (with respect to the variable x) of each of the following functions. Show your work in such a way that makes it clear what rule(s) you used. Do not simplify your answers.

(a) $g(x) = \frac{e^{4x}}{\sqrt{x}}$

(b) $h(x) = \cos(7x^3 + \frac{1}{x})$

[a] $g'(x) = \frac{\sqrt{x} \cdot 4e^{4x} - e^{4x} \cdot \frac{1}{2}x^{-1/2}}{(\sqrt{x})^2}$

(Note $\sqrt{x} = x^{1/2}$)

[b] $h'(x) = -\sin(7x^3 + \frac{1}{x}) \cdot (21x^2 - x^{-2})$

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

Note: \cos is a function, " $\cos(x)$ " means the cosine of x , not multiplication.

So, for $\frac{d}{dx} \cos(7x^3 + \frac{1}{x})$, you should use the chain rule, not the product rule.