

Problems 16 & 28, Section 5.4

Find the derivative of $f(t) = 4e^{3t+2}$ and $g(t) = \frac{e^{-t}}{1+t^2}$.

Well,

$$f'(t) = 4e^{3t+2} \cdot (3t+2)' = 4e^{3t+2} \cdot 3 = 12e^{3t+2}.$$

Also,

$$g'(t) = \frac{(t^2+1)(e^{-t})' - (t^2+1)'(e^{-t})}{(1+t^2)^2} = \frac{(t^2+1)(-e^{-t}) - (2t)(e^{-t})}{(1+t^2)^2}.$$