Do we Need the Quotient Rule?

a) $\left(\dfrac{x^3}{x+1}\right)' = \dfrac{3x^2(x+1) - x^3 \cdot 1}{(x+1)^2}$

b) $\left(x^3 (x+1)^{-1}\right)' = 3x^2(x+1)^{-1} + x^3 \cdot \left(-(x+1)^{-2}\right) \cdot 1 = \dfrac{3x^2(x+1) - x^3}{(x+1)^2}$

c) $\left(U V^{-1}\right)' = U' V^{-1} + U \cdot (-V^{-2}) \cdot V' = \dfrac{U'V - V'U}{V^2}$