1. (a) Construct a function $f(x)$ for which you *must* use logarithmic differentiation to compute $f'(x)$. Then compute $f'(x)$.

   (b) Construct a function $g(x)$ for which $\ln(g(x)) = \frac{\ln(x)}{2} + x\ln(\cos(x))$. Compute $g'(x)$.

   (c) Suppose that $h_1(x)$ and $h_2(x)$ are two functions so that $\ln(h_1(x)) = \ln(h_2(x)) + 1$. What is the relationship between $h'_1(x)$ and $h'_2(x)$?