MATH153 - Homework 6
due April 15 at 12.30

1. Find derivative of $f(x)$ where

   (a) $f(x) = (\sin^2(x) + 1)^{\cos(x^2)}$

   (b) $f(x) = \ln(x)^{\ln(x)}$ for $x > 1$

   (c) $f(x) = e^{tan(1+lnx)}$

2. Show that
$$f(x) = 1 + \sqrt[3]{x} + e^x$$
   has an inverse function. Find the derivative of the inverse of $f(x)$ at $x = 2 + e$, i.e. find $\left(f^{-1}\right)'(2+e)$.

3. Prove that $\ln(x) = 1/x$ has unique solution for $x > 0$