1. Find $f'$ for each of the following functions. Simplify your answers.
   
   (a) $f(\theta) = e^\theta \tan \theta$

   
   (b) $f(x) = \sin^2 x + \cos^2 x$

   
   (c) $f(x) = \sin(\cos(\sin x))$

2. Consider $f(x) = \frac{1}{\sin x}$. Is $f$ increasing at $x = \pi/4$? You must justify your answer without using a graph.