1. Derive an expression for the effective annual rate of interest $i$ in terms of $i^{(m)}$, a nominal annual interest rate of $i^{(m)}$, compounded $m$thly.

2. Suppose you go to a pawn shop offering an annual lending rate of 13%. You ask for a loan of $10000 and promise to pay it back in 1 year. The pawn shop owner agrees to give you the loan under the following conditions:
   
   - the annual interest rate is 13%
   - interest must be paid in advance!

   What is the effective annual interest rate that you were charged?