1. Suppose that $X$ follows a geometric distribution, $P(X = k) = p(1 - p)^{k-1}$ and assume an iid sample of size $n$.
   a. Find the method of moments estimate of $p$. (Hint: $\sum k x^{k-1} = \frac{1}{(1-x)^2}$)

   b. Find the MLE of $p$.

2. Suppose that $X_1, X_2, \ldots, X_n$ are iid $N(\mu, \sigma^2)$.
   a. If $\mu$ is known, what is the MLE of $\sigma$?

   b. If $\sigma$ is known, what is the MLE of $\mu$?