Quiz # 8 **Stat 3445, Due Apr 5**

Name:

1. Let $X_1, X_2, ..., X_n$ be a random sample from the following distribution:

$$f(x) = \begin{cases} \frac{1}{\theta} x^{\frac{1}{\theta}-1}, & 0 \leq x \leq 1,\ \theta > 0 \\ \\ 0, & \text{elsewhere.} \end{cases}$$

   (a) Let $Y_i = -\ln(X_i)$. Show that $\sum_{i=1}^{n} Y_i$ is sufficient for θ.

   (b) Calculate $P(Y_i > y)$. What is the distribution of Y_i? What is $E(Y_i)$?

   (c) What is the MVUE for θ?