96. Let $X_1, ..., X_n$ be a random sample from a population with PDF

$$f_X(x) = \begin{cases} \theta^{-1}, & 0 < x < \theta \\ 0, & \text{otherwise} \end{cases}$$

Let $X_{(1)} < X_{(2)} < .... < X_{(n)}$ represent the order statistics. Show $X_{(1)}/X_{(n)}$ and $X_{(n)}$ are independent random variables, and find their distributions.