

129. The independent random variables  $X_1, \dots, X_n$  have the common distribution

$$P(X_i \leq x \mid \alpha, \beta) = \begin{cases} 0, & x < 0 \\ \left(\frac{x}{\beta}\right)^\alpha, & 0 \leq x \leq \beta \\ 1, & x > \beta \end{cases}$$

- (a) Find a two dimensional sufficient statistic for  $(\alpha, \beta)$ .
- (b) Find the MLEs of  $\alpha$  and  $\beta$ .