

109. Let  $X_1, \dots, X_n$  be a random sample from PDF  $f(x|\mu) = e^{-(x-\mu)}$ , where  $-\infty < \mu < x < \infty$ .
- (a) Show that  $X_{(1)} = \min_{i=1, \dots, n} \{X_i\}$  is a complete sufficient statistic.
  - (b) Use Basu's Theorem to show that  $X_{(1)}$  and  $S^2$  are independent.