

1. For Bernoulli distribution with mean p , find a statistic $T(X)$ such that the likelihood ratio is monotone increasing function of $T(X)$.
2. Identify the distribution of $T(X)$ in 1.
3. Find an UMP test on $H_0 : p = 0.3$ versus $H_a : p > 0.3$ at the level $\alpha = 0.05$ with a sample of size 9.
4. Find an UMP test on $H_0 : p = 0.8$ versus $H_a : p < 0.8$ at the level $\alpha = 0.05$ with a sample of size 9.