

Name:

Quiz 7, Attempt 1

Suppose a population has a BER(p) distribution. What is the p-value based on the uniformly most powerful test of $H_0: p \geq \frac{1}{2}$ against the alternative that $p < \frac{1}{2}$. State what the test statistic is and report your answer in terms of the test statistic OR state that no uniformly most powerful test exists.

$\sum X_i$ is the test statistic.

$$\begin{aligned} \text{p-value} &= P\left(\sum X_i < \sum x_i \mid p = \frac{1}{2}\right) \\ &= P\left(\text{BIN}\left(n, \frac{1}{2}\right) < \sum x_i\right). \end{aligned}$$