

Stat 321

Assignment 1

1- Let X_1, \dots, X_n be a random sample of size n from a population which is $N(\mu, \sigma^2)$, where σ^2 is known. Let

$H_0: \mu = 2$ VS $H_1: \mu = 3$ on the critical region

$$\left\{ X_1, \dots, X_n : \left| \bar{X} - 2 \right| \geq d \right\}.$$

(i) find d when $\alpha = 0.01$

(ii) find β .

2- Let X_1, \dots, X_n be a random sample of size n from a population which pmf is given by

$$P(X = x) = \theta^x (1 - \theta)^{1-x}, \quad x = 0, 1, \quad 0 < \theta < 1.$$

Let $H_0: \theta = 0.3$ VS $H_1: \theta = 0.2$ on the critical region

$$\left\{ X_1, \dots, X_{12} : \sum_{i=1}^{12} X_i \leq c \right\}.$$

(i) find α when $c = 2$

(ii) find c when $\alpha = 0.085$