

37. Let  $X_1, \dots, X_n$  be IID  $\text{normal}(\theta, \sigma^2)$  where  $\sigma^2$  is known. For each of the following hypotheses, write the acceptance region of a level  $\alpha$  test and the  $1 - \alpha$  confidence interval that results from inverting the test.

(a)  $H_0 : \theta \leq \theta_0$  versus  $H_1 : \theta > \theta_0$  .

(b)  $H_0 : \theta \geq \theta_0$  versus  $H_1 : \theta < \theta_0$ .

(c)  $H_0 : \theta = \theta_0$  versus  $H_1 : \theta \neq \theta_0$ .