

STAT 701 Homework #1 Jan. 31 - Feb. 7, 2008

1. Let (X_1, \dots, X_n) be a sample of size $n \geq 6$ from a normal population $N(\mu, \sigma^2)$ with μ, σ^2 as parameters.

- (i) Find the UMVUE \hat{h} of $h(\mu, \sigma^2) = \mu^2/\sigma^2$.
- (ii) Is $P_{\mu, \sigma}(\hat{h} > 0) = 1$? Explain the answer.

2. Let (X_1, \dots, X_n) be a sample of size $n \geq 2$ from a uniform population $U(-\lambda_1\theta, \lambda_2\theta)$ with $\theta > 0$ as a parameter, λ_1, λ_2 given positive numbers.

- (i) Find the minimal sufficient statistic for θ .
- (ii) Construct the UMVUE of θ and calculate its variance.