

Department of Mathematics and Statistics
Semester 141

STAT302

Short Test on Chapter 10

Sunday December 14, 2014

Name: _____

ID #: _____



- Justify your work – state theorems and results you are using
- Show all details

- 1) Let Y_1 and Y_2 be iid with a uniform distribution on the interval $[\theta, \theta + 1]$. For testing $H_0 : \theta = 0$ vs. $H_a : \theta > 0$ consider the test:

Reject H_0 if $Y_1 + Y_2 > c$.

Find c such that the level of the test is 0.05 .

2) Y_1, \dots, Y_4 are iid with distribution $f(y|\theta) = \begin{cases} \frac{1}{\Gamma(3)\theta^3} y^{3-1} e^{-y/\theta} & y > 0 \\ 0 & \text{otherwise} \end{cases}$

a) Find the rejection region of the most powerful test of $H_0 : \theta = \theta_0$ vs. $H_a : \theta = \theta_a$.

b) Is the test given in part (a) uniformly most powerful? Explain.