

Question #235

Key: C

$l(\tau, \theta) = \sum_{j=1}^5 \ln f(x_j) = \sum_{j=1}^5 \ln \tau + (\tau - 1) \ln x_j - \tau \ln \theta - (x_j / \theta)^\tau$. Under the null hypothesis it is

$l(2, \theta) = \sum_{j=1}^5 \ln 2 + \ln x_j - 2 \ln \theta - (x_j / \theta)^2$. Inserting the maximizing value of 816.7 for θ

gives -35.28 . The likelihood ratio test statistic is $2(-33.05 + 35.28) = 4.46$. There is one degree of freedom. At a 5% significance level the critical value is 3.84 and at a 2.5% significance level it is 5.02.