Stat 122 (Mathematical Statistics 2)
Problem Set No. 3

INSTRUCTIONS: Answer the following as indicated. Show detailed solutions.

1. Suppose we have a random sample $Y_1, Y_2, \ldots, Y_n$ from a normal distribution with mean μ and variance σ^2. What is the distribution of the mean $U = \bar{Y} = \frac{\sum_{i=1}^{n} Y_i}{n}$?

2. Suppose we have a random sample $Y_1, Y_2, \ldots, Y_n$ from a chi-square distribution with 1 degree of freedom. What is the distribution of the sum $U = Y_1 + Y_2 + \cdots + Y_n$?