

Due Tuesday, Nov 13

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 7.1
2. Exercise 7.10
3. Exercise 7.17
4. Exercise 7.18
5. Exercise 7.19
6. Exercise 7.20
7. Exercise 7.22
8. Suppose Z_1, \dots, Z_5 is a random sample from the standard normal distribution, find a number z such that $P\left(\sum_{i=1}^5 Z_i^2 \leq z\right) = 0.95$.
9. Consider a normally distributed population with mean 12 and variance 4. Suppose n sample points Y_1, \dots, Y_n are chosen randomly from this population. Let $\bar{Y} = \sum_{i=1}^n Y_i$. Find the value of n for which $P(|\bar{Y} - 12| < 0.5) = 0.95$.
10. Let Z_1, \dots, Z_5 be an independent random sample from a standard normal distribution and let $Y = \sum_{i=1}^5 Z_i^2$. Suppose the random variable X , which is independent from the Z 's and Y , has a χ^2 distribution with 4 degrees of freedom. Find a number a such that $P(Y \leq a) = 0.95$. Find a number b such that $P\left(\frac{Z_1}{\sqrt{\frac{X}{4}}} > b\right) = 0.90$. Find a number c such that $P\left(\frac{Y}{\frac{X}{4}} > c\right) = 0.025$.