MATH 2F82 Assignment 2

1. Consider a random independent sample of size 11 from $\mathcal{N}(\mu = 6,\ \sigma = 3)$. Find $\Pr(\overline{X} > s + 6)$.

2. Consider a RIS of size 13 from $\mathcal{N}(1.7,\ 0.24)$. Compute $\Pr(s^2 < 0.1)$.

3. Using Maple, perform the experiment of the previous question 1000 times. How many times did you obtain a sample variance smaller than 0.1? Does this confirm the previous answer?

4. Consider a RIS of size 9 from $\mathcal{N}(\mu,\ \sigma)$. Find:

    (a) $\Pr(|\overline{X} - \mu| > \frac{s}{3})$,

    (b) $\Pr(|\overline{X} - \mu| > 0.12\sigma)$,

    (c) $\Pr(0.9\,\sigma < s < 1.1\,\sigma)$.

5. Two RISs are drawn, independently, from the same Normal population. The first sample is of size 7, the second one is of size 10. Find the probability that the first sample variance will be smaller than the second one.