1. Consider a random independent sample (RIS) of size 13 from $\mathcal{N}(\mu = 7, \sigma = 2)$. Find $\Pr(\overline{X} < \frac{s}{3} + 7)$.

2. Consider a RIS of size 12 from $\mathcal{N}(\mu = 1.2, \sigma = 0.3)$. Compute the probability that $\sum_{i=1}^{12}(X_i - \bar{X})^2 < 0.8$.

3. Consider a RIS of size 6 from $\mathcal{N}(\mu,\ \sigma)$. Find:

   (a) $\Pr(\left|\overline{X} - \mu\right| > \frac{s}{2})$,

   (b) $\Pr\left(\left|\overline{X} - \mu\right| > \frac{\sigma}{2}\right)$,

   (c) $\Pr(0.8\,\sigma < s < 1.2\sigma)$.

4. Customers arrive at a store at an average rate of 17.3 per hour. Find the probability that the time of the $7^{th}$ arrival from now (when time is set to 0) is more than 3 times the time of the $4^{th}$ arrival (use beta distribution).

5. Two RISs are drawn, independently, from the same Normal distribution. The first sample is of size 11, the second one is of size 14. Find the probability that the first *sample variance* will be more then twice as big as than the second one.