



# Sampling Distributions

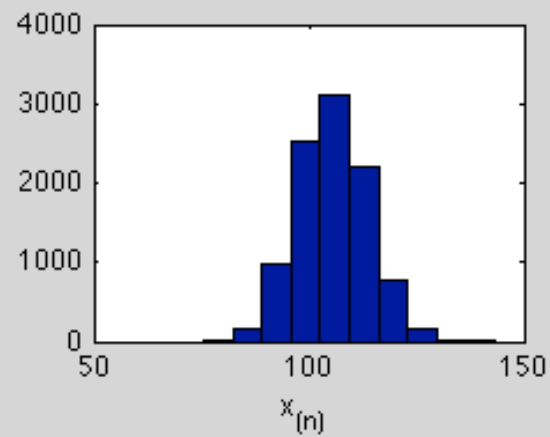
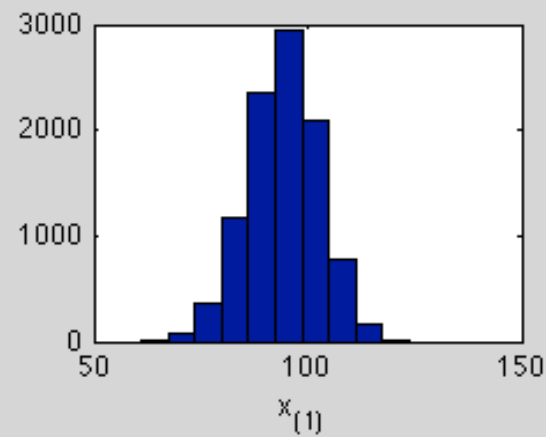
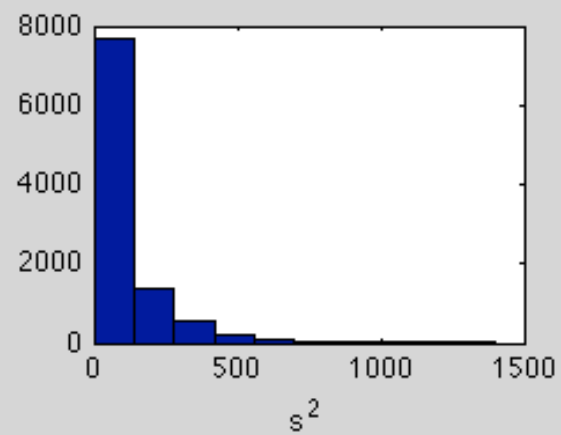
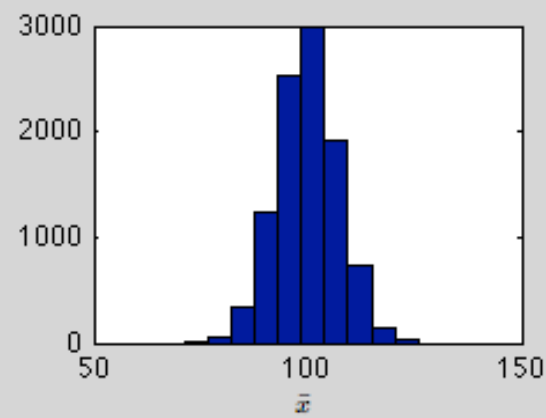
MATH 4343

Chapter 7 Introduction

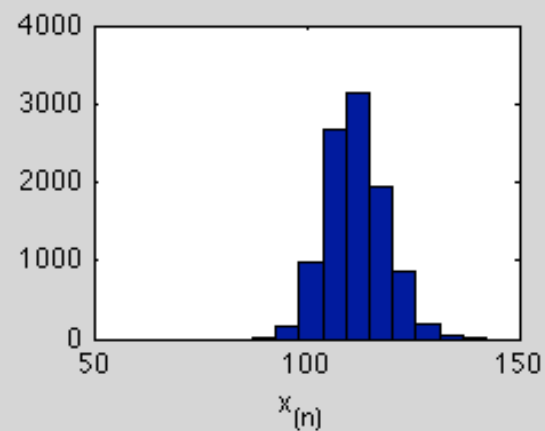
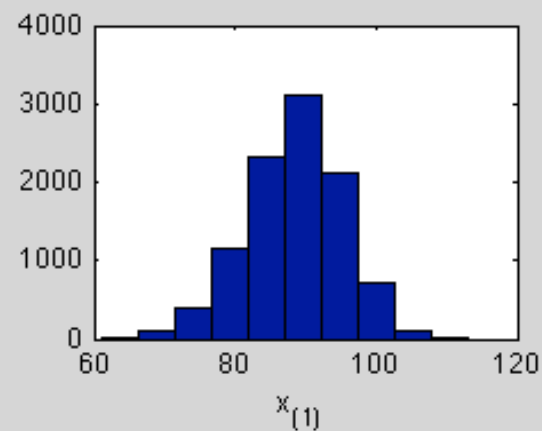
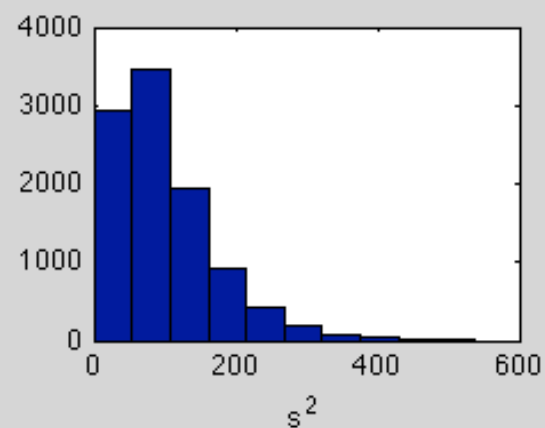
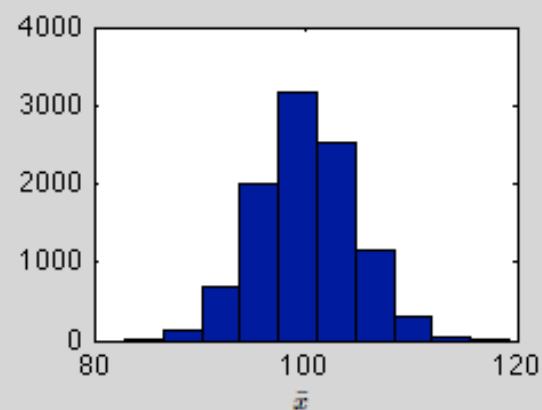
# Example: Normal Population

- Suppose  $X_1, \dots, X_n$  are i.i.d. from a normal distribution with mean 100 and variance 10.
- We will look at the sampling distributions of the sample mean, sample variance, sample minimum, and sample maximum for various sample sizes.

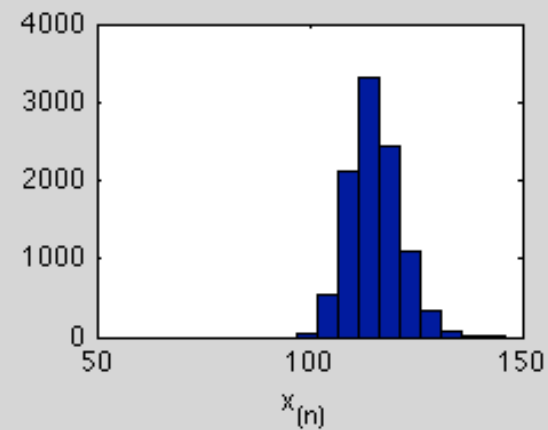
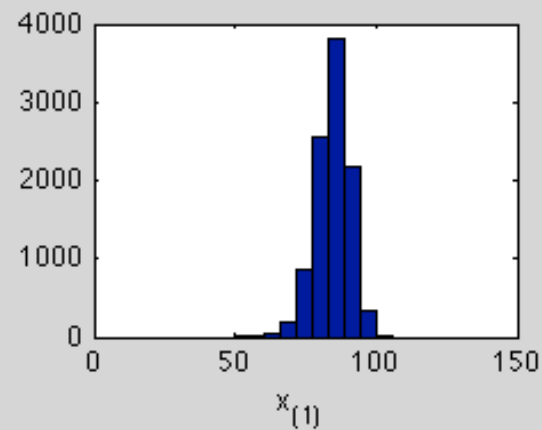
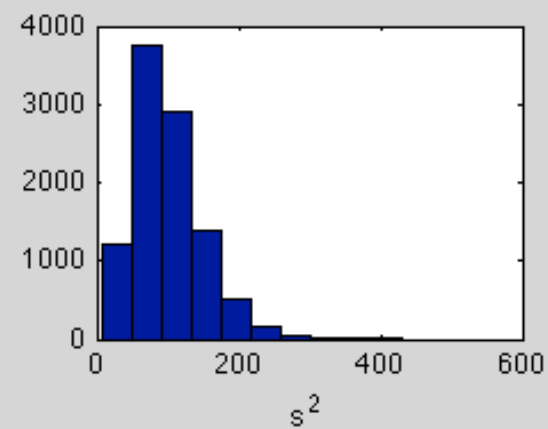
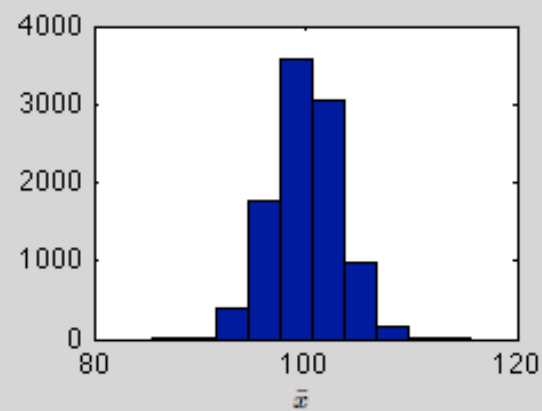
# Simulation: $n = 2$



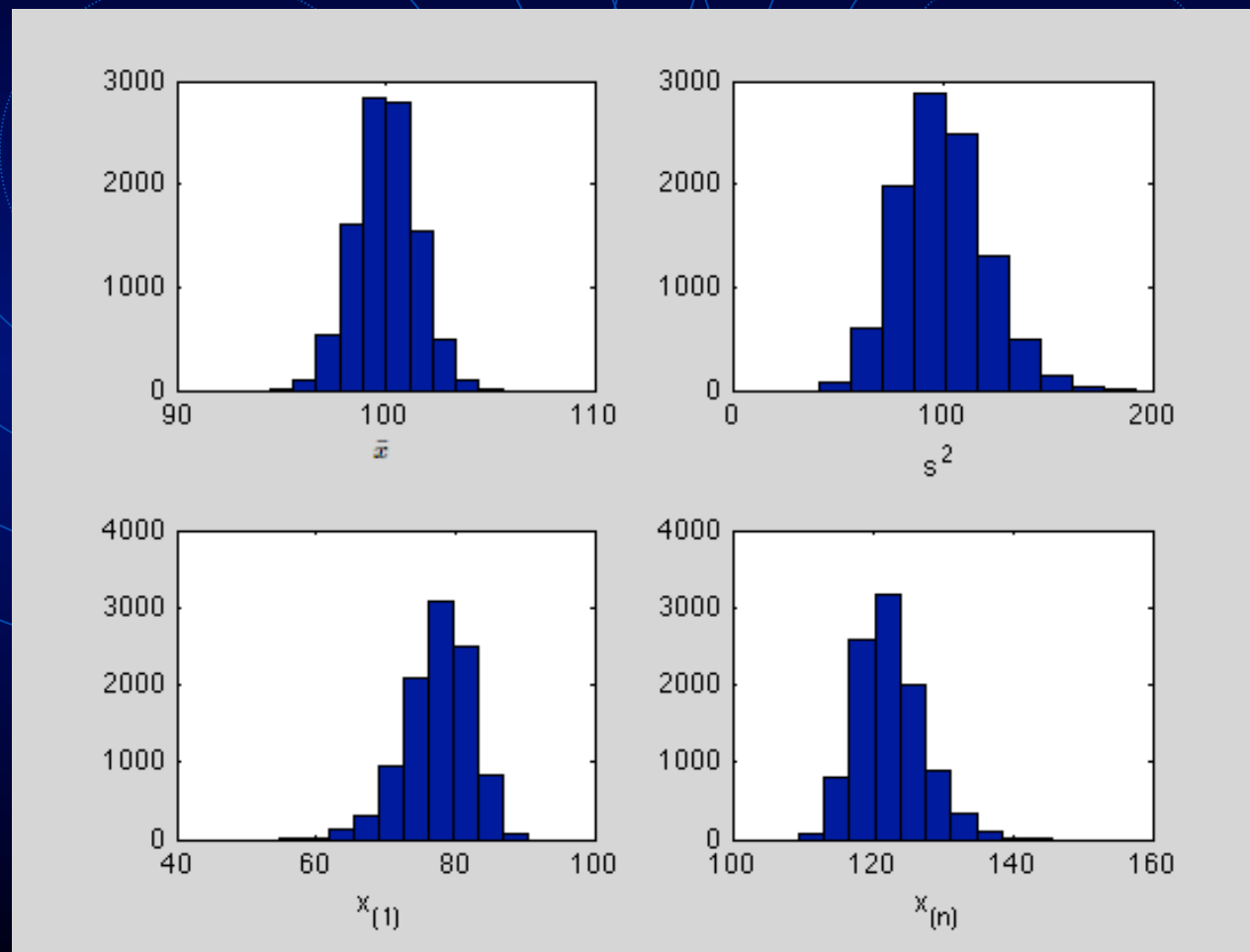
# Simulation: $n = 5$



# Simulation: $n = 10$



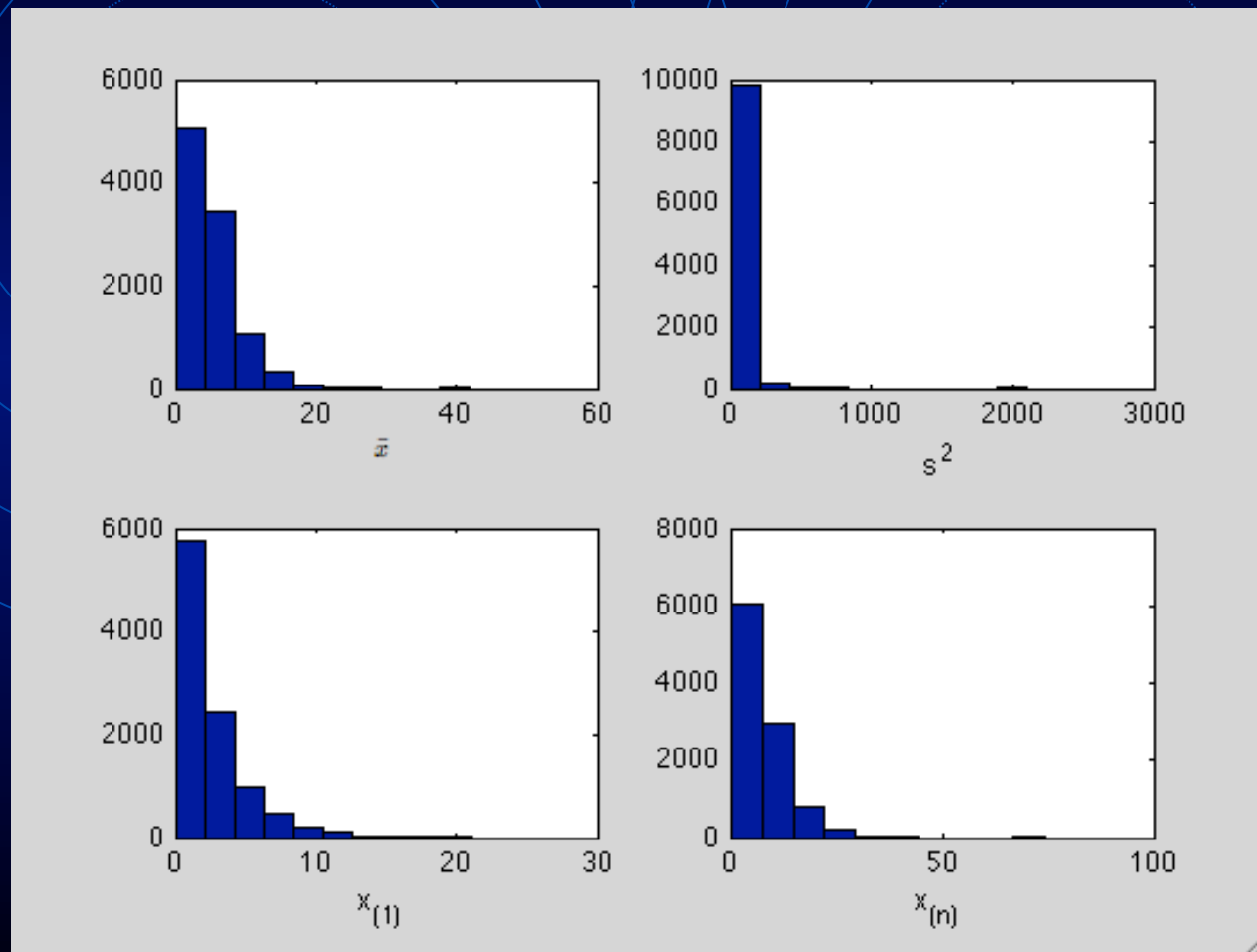
# Simulation: $n = 50$



# Example: Exponential Population

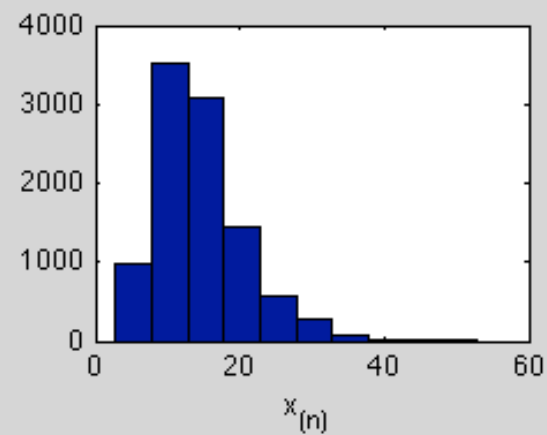
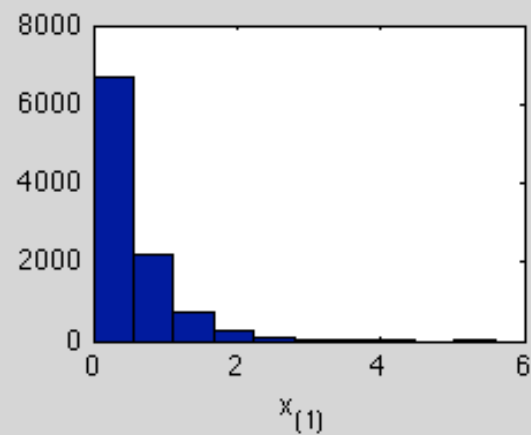
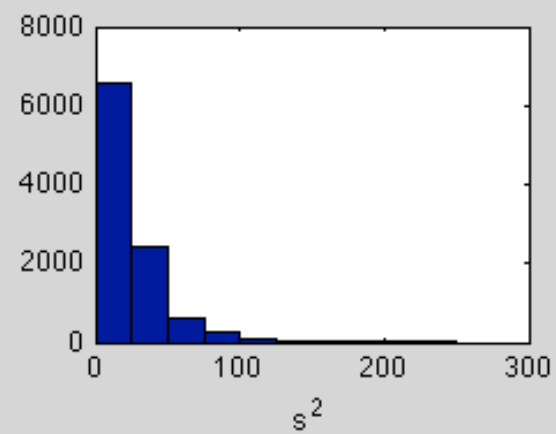
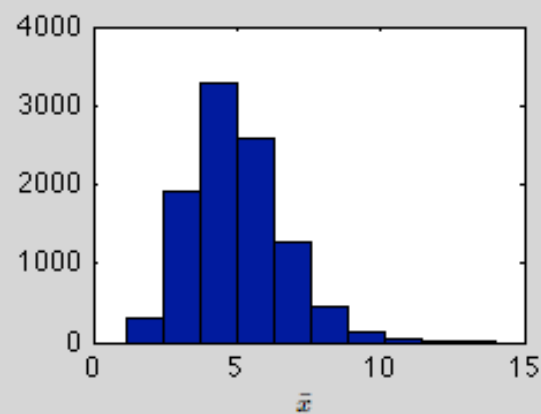
- Suppose  $X_1, \dots, X_n$  are i.i.d. from an exponential distribution with mean 5.
- We will look at the sampling distributions of the sample mean, sample variance, sample minimum, and sample maximum for various sample sizes.

# Simulation: $n = 2$

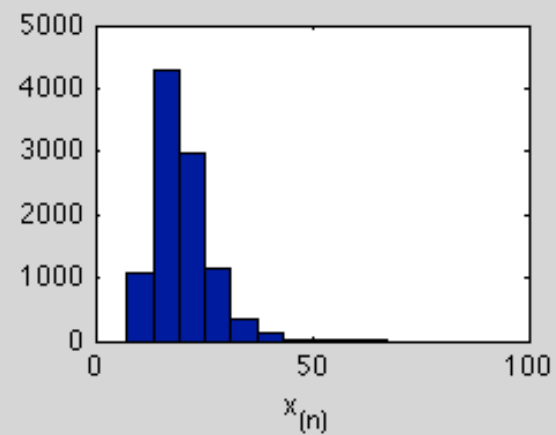
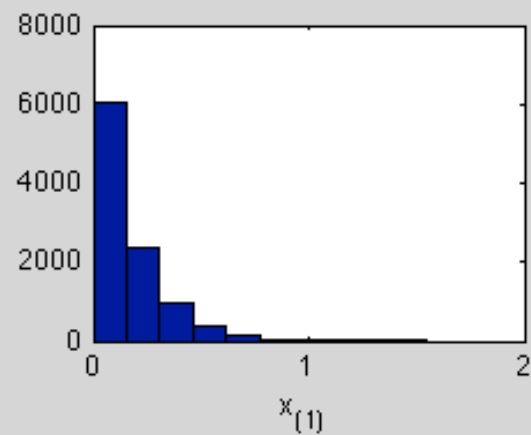
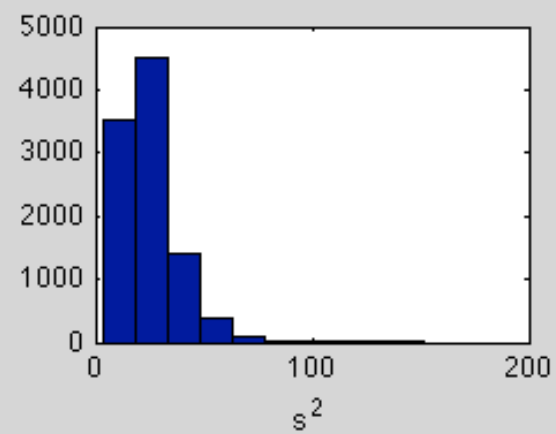
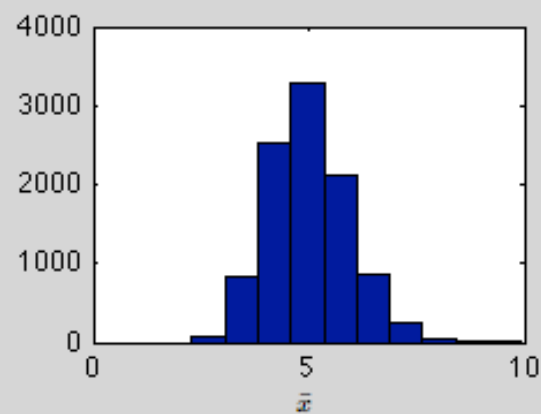




# Simulation: $n = 10$



# Simulation: $n = 30$



# Simulation: $n = 50$

