CHAPTER 5:

Continuous:

at most <=
at least >= (-1)

height of the curve:

$$f(x) = \frac{1}{b-a}$$

convert the problems to standard normal distribution:

$$Z = \frac{x - \bar{x}}{s}$$

The Exponential Distribution:

rate parameter(mean):

$$\lambda = \frac{1}{\mu}.$$

at most <=
at least >=

$$P(X \leq x) = 1 - e^{-\lambda x}$$
$$P(X \geq x) = e^{-\lambda x}$$

CHAPTER 6:

mean of the sampling distribution:

$$\mu_{\bar{x}} = \frac{sum\ of\ all\ sample\ means}{total\ number\ of\ samples}$$

Cochran's Formula for Sample size:

$$n_o = \frac{Z^2 pq}{e^2} \qquad n = \frac{n_o}{1 + \frac{n_o - 1}{N}}$$

Slovin's Formula for Sample Size:

$$n = \frac{N}{1 + Ne^2}$$

Equal allocation:

$$n_i = \frac{n}{k}$$

Proportional allocation:

$$n_i = \frac{N_i}{N} \times n$$

CHAPTER 6:

Hypothesis Testing

- Test Statistic:

$$t = \frac{\bar{x} - \mu_0}{\frac{s}{\sqrt{n}}}$$

- **df:** n-1

Correlation

Pearson Product-Moment Correlation:

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

Test Statistic:

$$t = r\sqrt{\frac{n-2}{1-r^2}}$$

df: n-2

SIMPLE LINEAR REGRESSION

Equation for a fitted line:

$$\hat{y} = a + bx$$

To find the slope b:

$$b = \frac{N\sum xy - \sum x \sum y}{N\sum x^2 - (\sum x)^2}$$

To find the value of a:

$$a = \bar{y} - b\bar{x}$$