

Uniform Distribution

Learning Objectives

- Compute probability using the uniform distribution
 - Compute the mean, means and standard deviation of the uniform distribution
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Compute probability using the uniform distribution

1. A manufacturing process produces a product at a uniformly distributed random time between 3 minutes and 5 minutes. Use that information to calculate the following probabilities.
 - a. $P(3 \leq t \leq 3.5)$
 - b. $P(4 \leq t \leq 5)$
 - c. $P(x > 5)$

Compute the mean, median and standard deviation of the uniform distribution

2. The probability density function for the situation above is $f(x) = \frac{1}{2}, 3 \leq x \leq 5$. Find the value of the following parameters.

- a. The mean

- b. The median

- c. The standard deviation

- The standard deviation σ is the square root of the variance, σ^2 .
- $\sigma^2 = \int_a^b (x - \mu)^2 f(x) dx$

ANSWER KEY

1. a. $P(3 \leq t \leq 3.5) = 1/4$, b. $P(4 \leq t \leq 5) = \frac{1}{2}$, c. $P(x > 5) = 0$

2. a. $\mu = 4$, b. median = 4, c. $\sigma = \frac{1}{\sqrt{3}}$