

Statistical Foundations of Data Science
Homework 2
Due March 26

The content of this assignment is based on the sixth lecture in the course titled "Continuous Distributions".

1. Find c such that

$$f(x) = \begin{cases} c(6-x) & x \in (0, 6) \\ 0 & elsewhere \end{cases}$$

is a distribution. Find the mean and variance of this distribution.

2. Let X be distributed continuous uniform between -2 and 3 . Compute

- a $\mathbb{P}(X > 1)$ [2]
- b $\mathbb{P}(X^2 > 1)$ [3]
- c $\mathbb{E}[X]$ [2]
- d $V(X)$ [3]

3. Let X be distributed exponential with parameter $\lambda = 1.5$. Compute

- a $\mathbb{P}(X > 2)$ [2]
- b $\mathbb{P}(X > 4)$ [2]
- c $\mathbb{E}[X]$ [3]
- d $V(X)$ [3]