

Lab Nr. 2, Probability and Statistics

Discrete random variables; Probability distribution function, PDF and CDF

1.

- *disttool*: graphs of pdf's and cdf's of common distributions;
- *Statistics Toolbox*, pdf and cdf.

2. Plot the graphs of the pdf and the cdf of a random variable X having a Binomial distribution of parameters n and p (given by the user).

Application

A coin is tossed 3 times. Let X denote the number of heads that appear.

- Find the probability distribution function of X . What type of distribution does X have?
- Find the cumulative distribution function of X , F_X .
- Find $P(X = 0)$ and $P(X \neq 1)$.
- Find $P(X \leq 2)$, $P(X < 2)$ (notice that they are *different*).
- Find $P(X \geq 1)$, $P(X > 1)$ (notice that they are *different*).
- Write a Matlab code that simulates 3 coin tosses and computes the value of the variable X .