
RANDOM VARIABLE AND ITS BASIC PARAMETERS, BIVARIATE (2D) RANDOM VARIABLE

ONE-D random variable

consult the file 'Lab1_students.xlsx';
fill the columns:

P – height over 180;
Q – sex=boy;
R – boy over 180;
S – blood group AB;
T – AB group and > 180

using the IF function – if the condition is fulfilled insert 1; if not – 0.

Calculate: $\mathcal{P}(P)$, $\mathcal{P}(Q)$, $\mathcal{P}(S)$, $\mathcal{P}(P \cap Q)$, $\mathcal{P}(P \cap S)$,

Check whether the variables P and Q and P and S are dependent or independent?

The F column gives the numbers of brothers and/or sisters of the interviewed students.
Extract from these data:

1. the frequencies and probabilities of having X brothers/sisters; arrange these data in the form of a histogram;
2. calculate the expected value μ_X , variance σ_X^2 , skewness and kurtosis of X using the 'direct' formulae (like in the file: examples.xlsx) and excel statistical functions.

From the file examples_student, sheet one-D R.V. select a set of data (one of **A,B,C**) and carry out the same analysis (histogram, numerical parameters) as above

TWO-D random variable

From the file 2D_RV_stud.xlsx select a set of data and carry out the analysis of the behaviour of RV in the same manner as it is done in examples_students.xlsx sheet 2-D random variable.

Calculate also the correlation coefficient: $\rho(X, Y)$