

[*Portfolio Management*] Download the dataset on NewE3 "Stocks_ClosePrice.csv" and start with the five stocks. Answer the following questions.

- a) Find the mean and standard deviation of returns of these five stocks.
- b) Plot the mean and risk (standard deviation) for these five returns using red stars in the 2-dimensional plane.
- c) Randomly selected weights so that each weight is nonnegative and sums up to one. Print the random weight, the mean and standard deviation of the portfolio.
- d) Repeat c) for 1000 times, and plot the mean and standard deviation for these artificial portfolios using blue points in the 2-dimensional plane in b).
- e) Draw the efficiency frontier in the figure of b), assuming that no short sales are allowed.
- f) Check if the efficiency frontier in e) is the envelope line of the blue points in d).