**Laboratory work #8**

**Goal of the lab**: Repeat how to realize DFT with built-in function and how sampling rate influences on discrete signal

**Task 1:**

Assume that you have a signal, which composed of two sinusoids, with different frequencies. (add your signal)

Calculate the spectrums of given signal and the same signal, which was corrupted with noisy signal. The number of simulated samples is chosen to be a multiple of fs, which in this case means that the DFT‘s analysis frequencies exactly match to the frequencies present in the signal. Show signals in time and frequency domains. Show spectrums in terms of analog frequencies (Hz).

For calculating of DFT use **fft** build-in function. **abs** function calculate the Magnitude of the complex signal.

**Task 2:** Generate a continuous signal and sample it at a selected rate. In simulations, generate a continuous time signal and convert it to discrete domain by appropriate sampling. Proof that your sampling is proper.