1) Implement in Matlab the $64 \times 64$ DFT algorithm. Apply it to the following vectors: $v_1(k) = \sin(2\pi k/64), k = 0, \ldots, 63,$ $v_2(k) = \sin(4\pi k/64), k = 0, \ldots, 63,$ $v_3(k) = \cos(2\pi k/64), k = 0, \ldots, 63$. Plot the results in form of a function graph. Draw conclusions.

2) Analyze the speed of your implementation of DFT as a function of the length of the input vector.