MATH 464, HW 9

1) Implement in your preferred Computer Algebra System (MATLAB, MATHE-MATICA, MAPLE, DERIVE, OCTAVE, etc etc) the DFT matrix (Example 3.8.5.a in your textbook) for $N = 2^5$. Apply it to a vector

$$f(k) = \sin(2\pi k/32), \quad k = 0, \ldots 31.$$

2) Compute by hand:

a) Fourier coefficients of $F(x) = \sin(x)$, $x \in [0, 2\pi]$,

b) Fourier transform of $F(x) = \sin(x)$, $x \in [0, 2\pi]$.

3) Compare the results of parts 1 vs. 2.