

General Mathematics and ACM II

Exercise 20

May 11, 2011

1. Without using a computer, compute the discrete Fourier transform of the vector

$$v = \begin{pmatrix} 0 \\ 1 \\ 2 \\ 3 \end{pmatrix}.$$

Then compute the inverse transform and verify that you get back the same vector v .

2. Solve the difference equation

$$\begin{aligned} t_n &= 2t_{n-1} + 2^{n+1}, \\ t_1 &= 0. \end{aligned}$$