

Math 441 Homework due 11/7/11
Dr. Minkoff

- (1) Find the discrete transforms $c = F^{-1}f$ of the following sequences: $f = (1, 1, 1, 1)$, $f = (1, 0, 1, 0)$ and $f = (1, -1)$.
- (2) Find the inverse transforms Fc of $c = (1, 1, 1, 1)$ and $c = (0, 0, 1, 0)$.
- (3) Mark all the sixth roots of 1 in the complex plane. What is the complex number w_6 ? Why is $1 + w + w^2 + w^3 + w^4 + w^5 = 0$?
- (4) Compute $y = F_4x$ by the three steps of the FFT for the even vector $x' = (2, 6, 6, 6)$ and the odd vector $x'' = (0, -2, 0, 2)$.