MATH 416, HW 3

1. Find the Lagrange polynomial through the points $(1, 2)$, $(2; 5)$, $(3; 4)$.

2. Find the expansion in Chebyshev polynomials $T_0(x), T_1(x), T_2(x)$ of the function $f(x) = 1 + x^2$ dened for $x \in [?1, 1]$.

3. Implement in Matlab the Chebyshev evaluation of polynomials, and solve problem 2 numerically.

4. Suppose that $f(x) = c$ is a constant function. Show that for any sampling of f, the piecewise linear approximation exactly equals f.