

MATH 416, HW 4, FALL 2014

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 $f(x) = 1 + x^2$ defined for $x \in [-1, 1]$.
3. Suppose that $f(x) = c$ is a constant function. Show that for any sampling of f , the piecewise linear approximation exactly equals f .