

Assignment 4

Read section 10 of *Matlab for Math 303*.

Consider the function $f(x) = |x|$ on $-3 \leq x < 3$.

- (a) Write an m-file for the periodic extension of $f(x)$ with period $T = 6$.
- (b) Compute the Fourier coefficients and write an *m*-file for the Fourier sum $s_n(x)$.
- (c) Plot the graph of $f(x)$ and $s_{10}(x)$ over $-10 \leq x \leq 10$ on the same figure.
- (d) Plot the graph of the error function $e_n(x) = |f(x) - s_n(x)|$ for $n = 10$. Specify points x where the error maximizes?