

ECON 5760
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Problem Set 1

Problem 1. For this problem you are to write a script (m-file) called `taylorapprox.m` that does up to a 3rd order Taylor approximation of the function $f(x) = x^2$.

a. Let $\bar{x} = 0$ and $h \in (-1, 1)$. Write a loop that evaluates the approximation across all values of h . How “good” is the linear approximation away from $\bar{x} = 0$? What explains the linear function’s performance? How does it compare to a 2nd and 3rd order approximation?

b. How long did the loop take to complete across all values for h ? Now vectorize the code so that the loop across all h is no longer needed. How much faster is the vectorization versus the loop? Call this script `taylorapproxvec.m`.