(1) Use the Taylor expansion of \( f(x) = \ln(1 + x) \) at \( x = 0 \) to approximate \( f(x) \) for \( x = 0.1, \ x = 0.5 \) and \( x = 1 \). To practice your Matlab skills, please implement this in two ways: one using a for loop and the other one relying only on array syntax. Put each of the different “methods” in its own Matlab function.

(2) Produce a table with the approximation error for \( n = 5, \ n = 10 \) and \( n = 20 \) in the rows and all the combinations of values of \( x \) and methods to compute the Taylor approximation as columns.