Homework #4

• Textbook: 8.3.10, 8.3.14 (refer to Table 8.5), 8.3.19 (note: \( \omega > 0 \)), 5.3.6 (use \( || \cdot ||_2 \)), 5.3.7 (use \( || \cdot ||_2 \)), 5.3.8

• Programming:

1. (a) Write a function that takes as input
   - number of iterations \( N \);
   - sparse matrix in the format \( r, c, v, m, n \);
   and runs the Power method on that matrix for \( N \) iterations on an initial guess the vector of 1’s, and outputs
   - the approximate eigenvalue, \( s_N \);
   - the number of flops used.
   Write out or print out your function and turn it in.

(b) Run the case with \( n = 4 \), \( r = [1; 2; 3; 4; 1; 2; 3; 2; 3; 4], c = [1; 2; 3; 4; 2; 3; 4; 1; 2; 3], \)
    \( v = [3; 3; 3; 3; -1; -1; -1; -2; -2; -2] \) for 1, 10, and 100 iterations and write out or print out your results.