Homework #4

- Textbook: 2.1.17, 2.1.30, 2.1.31, 2.1.32, 2.1.33, 8.3.10, 8.3.14 (refer to Table 8.5), 8.3.19
  (note: \( \omega > 0 \))

- Programming:
  
  1. (a) Write a function that takes as input
     - dimension \( n \);
     - \( n \times n \) matrix \( A \);
     - calculates the infinity norm of \( A \) using the formula
       \[
       \|A\|_\infty = \max_{1 \leq i \leq n} \sum_{j=1}^{n} |a_{ij}|
       \]
     and outputs the result. Write out or print out your function and turn it in.

     (b) Let \( A = \) the tridiagonal matrix with \( p \)'s for elements on the main diagonal and \( q \)'s for elements on the lower diagonal and \( r \)'s for elements on the upper diagonal. For \( n = 100 \) and \( (p, q, r) = (2, -1, -1) \) and \( (4, 2, 1) \) and \( (-10, 3, -5) \), have Matlab calculate \( A^{-1} \) using the command: \text{inv}(A), \text{ and write out or print out the results of your function on } A^{-1}.\)