Math 477/577 — Computer Assignment 1

1. Set up a 4×4 matrix, and use the function `sum` to find the sums of the first row and second column of the matrix.

2. Solve the following system of equations using Matlab:

$$\begin{aligned} 2x + y + 5z &= 5 \\ 2x + 2y + 3z &= 7 \\ x + 3y + 3z &= 6\ . \end{aligned}$$

   Verify your solution by matrix multiplication.

3. Write a simple script to input two square matrices A and B. Then add, subtract and multiply them. Comment the script and use `disp` to output suitable titles.

4. Write a Matlab script to produce graphs of the functions $y = \cos x$ and $y = \cos(x^3)$ in the range $x = -4 : 0.02 : 4$ using the same axes. Use the Matlab functions `xlabel`, `ylabel` and `title` to annotate your graphs clearly.

5. Write a function `col_sum` that generates a random square matrix A of specified size n, and then finds the sums of each of the columns using
   (a) `for`-loops,
   (b) the function `sum`.
   Include a timing comparison. Test the function with $n = 10,\ 100,\ 1000$.