

Homework # 1, due Wed, Jan 26th.

1. Generate a plot of the function `cos` on the interval $[-1, 1]$ with an appropriate title. Turn in the figure along with the commands you used to generate it.
2. Create a MATLAB function `ssolve` that accepts three parameters, a , b and n , in that order, and returns the solution to the following $n \times n$ system:

$$\begin{bmatrix} 1 & a & \cdots & 0 & 0 \\ 0 & 1 & \cdots & 0 & 0 \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & \cdots & 1 & 0 \\ b & b & \cdots & b & 1 \end{bmatrix} x = \begin{bmatrix} 1 \\ 2 \\ \vdots \\ n-1 \\ n \end{bmatrix}.$$

Turn in a printout of the function.

3. Plot the vectors `ssolve(10,0.1,30)` and `ssolve(4,-0.5,50)`. Turn in the code that generated these figures.
4. Create a MATLAB function that inverts the Hilbert matrix of order n . The Hilbert matrix has elements $\{1/(i+j-1)\}_{i,j=1}^n$.