

Lab 8 Assignment

Due October 31st on Blackboard by 5 pm.

Use the algorithm for the Gram-Schmidt process that was discussed in the lab handout, not the one from the book.

Write a function `grams.m` that performs the Gram-Schmidt process on the columns of an arbitrary matrix A with linearly independent columns (we trust the user to use such a matrix) and returns a matrix Q whose columns are the resulting orthonormal vectors. Test your code on the following matrix,

$$A = \begin{pmatrix} 1 & -1 & 7 & 1 \\ 0 & 6 & -3 & 3 \\ -7 & -7 & -7 & 4 \\ -9 & 6 & 0 & -1 \end{pmatrix}$$

Check that your answer is a matrix whose columns form a set of orthonormal vectors. Think about what it means to be orthonormal in terms of a matrix and what operation can verify this property.

As usual, you should write your code execute all cells and submit your work as a pdf file.