

Homework 6, due Tuesday 25 October.

1. (20 points) Section 4.3 computer problem 1. Put in lots of comments and print out your code.
2. (20 points) Do this problem as a Good Problem, using the handouts that you already have.
Section 4.4 problem 2.
3. (20 points) Section 4.4 problem 40a
4. (40 points)
 - (a) Section 4.5 problem 21.
 - (b) Relate this problem to Section 3.2 problems 5 and 6, and thereby construct a recursive algorithm for computing A^{-1} .
 - (c) Verify the product formula

$$(I - A)^{-1} = \prod_{k=0}^{\infty} (I + A^{2^k}).$$

- (d) Compare the standard Neumann series formula

$$(I - A)^{-1} = \sum_{k=0}^{\infty} A^k$$

from Section 4.5 with the product formula and recursive method above. All three can be used to construct the inverse of a matrix. Which method is most efficient? Which algorithm would you recommend?