Linear Algebra
C Term, Sections C01-C04
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Linear Algebra Assignment 6

DUE DATE: Wednesday, February 20, noon. Deliver to your conference PLA. No late assignments will be accepted for credit.

N.B. Keep in mind Professor Martin's rules for completing assignments.

Please complete the following four problems:

1. Find a basis for the null space of $\lambda I - A$ where $\lambda = 4$ and

$$\begin{bmatrix} 5 & 0 & -2 \\ -3 & 4 & 6 \\ 2 & 0 & 0 \end{bmatrix}$$

[HINT: Exercises 13-16 on page 282 are of this sort.]

2. Exercise #32 on page 293.

3. Let A be an $m \times n$ matrix and let B be a $k \times n$ matrix. Consider the partitioned matrix

$$C = \left[\frac{A}{B}\right]$$

Find a sensible lower bound and a sensible upper bound on the rank of C in terms of the ranks of A and B. *[NOTE: Partitioned matrices are introduced on page 24. The augmented matrix $[A|b]$ is an example.]*

(b) Construct a simple example of a matrix A and a matrix B for which your lower bound is attained.

(c) Construct a simple example of a matrix A and a matrix B for which your upper bound is attained.

4. Exercise #2 on page 354.