

**Department of Applied Physics and Applied
Mathematics
Columbia University**

**APMA S3101D: Applied Math I - Introduction to Linear Algebra
Summer 2003**

Problem Set 5

Note: This is for those who use the **SECOND version of the
textbook. Those who have the third version of the book please go to**

ps5-v3.ps

(Due July 3, 2003)

1. Problem Set 5.1: 2¹, 6, 9²
2. Problem Set 6.1: 2, 7, 11, 25
3. Problem Set 6.2: 15, 20, 24, 29
4. Problem Set 6.3: 3, 7, 12³

¹Same problem, but please change 'det $A = -3$ ' to 'det $A = -1$ '

²Do these matrices have determinant 0, 1, 2, or 3?

$$A = \begin{pmatrix} 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{pmatrix} B = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix} C = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix}$$

³Same problem, but the particular solution is given: $u_p = A^{-1}b$.

5. Problem Set 6.4: 9, 14⁴

6. Problem Set 6.7: 8, 10, 13

⁴Same problem, but please change:

$A = \begin{pmatrix} i & 1 \\ 1 & -i \end{pmatrix}$ is not diagonalizable; $\det(A - \lambda I) = \lambda^2$