Dr. A. Betten Spring 2008

MATH 369 Linear Algebra

Assignment # 2

Problem # 8

Find the equation of two lines through A, one parallel and the other perpendicular to the line corresponding to the given equation.

a) $A(4,1), 2x-3y+5=0$

b) $A(-1,1), y=1$

Problem # 9

Find the distance from the line to the point.

a) $5x+12y+60=0; (3,2)$

b) $x+y-3=0; (4,5)$

Problem # 10

Find the equation of the bisector of the acute angles formed by the lines $3x+4y-12=0$ and $12x-5y-20=0$.

Problem # 11

Sec 1.4 (pg 69): 3ac

Problem # 12

Determine permutation matrices A and B such that

$$A \begin{pmatrix} 1 & 2 & 3 \\ 6 & 5 & 4 \\ 7 & 8 & 9 \end{pmatrix} B = \begin{pmatrix} 9 & 8 & 7 \\ 4 & 5 & 6 \\ 3 & 2 & 1 \end{pmatrix}$$

Problem # 13

Consider the $n \times n$ matrix $J_n = \begin{pmatrix} 1 & \cdots & 1 \\ \vdots & & \vdots \\ 1 & \cdots & 1 \end{pmatrix}$

What is J_n^2?

Problem # 14

Consider the $n \times n$ matrix $S_n = \begin{pmatrix} 0 & \cdots & \cdots & 0 & 1 \\ 1 & \ddots & & & 0 \\ 0 & \ddots & \ddots & & \vdots \\ \vdots & \ddots & \ddots & \ddots & \vdots \\ 0 & \cdots & 0 & 1 & 0 \end{pmatrix}$

a) Write down S_4

b) What is S_4^2?

c) What is S_4^3?

d) What is S_4^4?

e) (bonus) What is S_n^i?