MATH 1090-8: QUIZ 5
no calculators allowed!
October 18, 2007

1. Let

$$A = \begin{pmatrix} 1 & 2 \\ -2 & -3 \end{pmatrix} \qquad B = \begin{pmatrix} 1 & 0 & 2 \\ 0 & 2 & 3 \\ 1 & 1 & 5 \end{pmatrix} \qquad X = \begin{pmatrix} x \\ y \end{pmatrix} \qquad D = \begin{pmatrix} 1 \\ 2 \end{pmatrix} \quad .$$

(a) Compute $A + D$.

Solution. This is not possible since A and D have different sizes.

(b) Compute B^2.

Solution.

$$B^2 = \begin{pmatrix} 3 & 2 & 12 \\ 3 & 7 & 21 \\ 6 & 7 & 20 \end{pmatrix} \quad .$$

(c) Compute A^{-1}.

Solution.

$$A^{-1} = \begin{pmatrix} -3 & -2 \\ 2 & 1 \end{pmatrix} \quad .$$

(d) Solve

$$AX = D$$

for x and y by any means you wish.

Solution.

$$X = A^{-1}D = \begin{pmatrix} -3 & -2 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \begin{pmatrix} -7 \\ 4 \end{pmatrix} \quad .$$

So $x = -7$ and $y = 4$.