HW1: Due Tuesday, July 13th

This is the complete homework assignment (I won't add anything tomorrow). All of the old final exam problems can be found here:
http://www.math.upenn.edu/ugrad/calc/m240/oldexams.html
I've come the the conclusion that it will take me way too long to type up the problems for those that don't have the book. I won't collect problems from the book for grades but I will assign them for practice. The only problems that you need to turn in to be graded are those from past finals with asterisks and the problems I write myself. The rest will be good practice for this quizzes/tests!

Old final exam problems

FALL09#1,2
FALL08#1,2*,3*
SPRING09#2
FALL07#2,4*
SPRING08#8
FALL06#2*
SPRING06#1,16,17*
FALL04#3
SPRING04#4*,7

My problems

The point of this problem is to demonstrate that for some matrix A, knowing what Av is for just a few vectors v can tell you what Av is for any vector!

1. Suppose A is 2x2 and $A \begin{pmatrix} 1 \\ 0 \end{pmatrix} = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$ and $A \begin{pmatrix} 0 \\ 1 \end{pmatrix} = \begin{pmatrix} -2 \\ -2 \end{pmatrix}$.
What is $A \begin{pmatrix} -2 \\ 3 \end{pmatrix}$?

2. Suppose A is 2x2 and $A \begin{pmatrix} 2 \\ 0 \end{pmatrix} = \begin{pmatrix} -4 \\ 6 \end{pmatrix}$ and $A \begin{pmatrix} 0 \\ 3 \end{pmatrix} = \begin{pmatrix} 6 \\ 0 \end{pmatrix}$.
What is $A \begin{pmatrix} 5 \\ 2 \end{pmatrix}$?

3. Suppose A is 2x2 and $A \begin{pmatrix} 1 \\ -1 \end{pmatrix} = \begin{pmatrix} 3 \\ 3 \end{pmatrix}$ and $A \begin{pmatrix} 1 \\ 1 \end{pmatrix} = \begin{pmatrix} -4 \\ 2 \end{pmatrix}$.
What is $A \begin{pmatrix} 2 \\ 0 \end{pmatrix}$?

4. Suppose A is 2x2 and $A \begin{pmatrix} 3 \\ 2 \end{pmatrix} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$ and $A \begin{pmatrix} -1 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$.
What is $A \begin{pmatrix} 7 \\ 12 \end{pmatrix}$?

Problems from the book (extra practice!)

8.1#11,17,18,21,22
8.2#1,2,5,7,9,15
8.3#1,3,5,11,12,16
8.4#15,17
8.5#3,8,12,13,25,27
8.6#5,9,21,25,36,38,39,43,45