Math 2270-002
Homework due October 31.

Recall that problems which are not underlined are good for seeing if you can work with the underlying concepts; only the underlined problems need to be handed in. The Wednesday quiz will be drawn from all of these concepts and from these or related problems.

4.9: applications to Markov Chains
1, **2**, 11, **12**, **16**, **17**.

Google page rank problems, from "The Giving Game" notes:
4, **5** (we'll make predictions in class. Compute large powers of the associated transition matrix to confirm your predictions.) **7**.

5.1 Eigenvectors and eigenvalues
1, 3, 7, 9, 11, 13, 17, **19**, 21, **23**, **25**, **31**

5.2 The characteristic equation
1, 3, 5, **9**, **15**, **19**, **21**

w9.1) Find eigenvalues and eigenvectors (or a basis for the eigenspace if the eigenspace is more than one-dimensional), for the following matrices. You can check your work with technology, but you don't have to hand in the technology check.

a) $A := \begin{bmatrix} -1 & -2 \\ 4 & 5 \end{bmatrix}$

b) $B := \begin{bmatrix} 3 & 1 \\ -1 & 1 \end{bmatrix}$

c) $C := \begin{bmatrix} 2 & 9 & 3 \\ -2 & -5 & 0 \\ 2 & 6 & 1 \end{bmatrix}$

d) $E := \begin{bmatrix} 1 & 6 & 6 \\ 0 & -1 & -2 \\ 0 & 4 & 5 \end{bmatrix}$

e) $F := \begin{bmatrix} 5 & 3 & -9 \\ -4 & -5 & 4 \\ 4 & 2 & -7 \end{bmatrix}$. In this problem you may use technology to compute and factor the characteristic polynomial, and to find the eigenspace bases. Be careful with what the technology is telling you.