66. Show that eigenvectors corresponding to different eigenvalues are linearly independent.

67. Diagonalize the following matrices, if possible. If not possible, explain why it is not possible.

(a) $\begin{bmatrix} -4 & -3 \\ 3 & 6 \end{bmatrix}$;

(b) $\begin{bmatrix} .85 & .03 \\ .15 & .97 \end{bmatrix}$;

(c) $\begin{bmatrix} 2 & 0 \\ 0 & 0 \end{bmatrix}$;

(d) $\begin{bmatrix} 0 & -1 \\ 0 & 1 \end{bmatrix}$.

68. Find the kth power of each of the matrices from the previous problem.

69. Suppose $r_0 = r_1 = 1$ and $r_{n+1} = r_n + 2r_{n-1}$ for each $n \in \mathbb{N}$. Find a formula for r_n for each $n \in \mathbb{N}$.

70. Work on all exercises from Section 5.3.

71. Work on at least ten exercises from the Review Exercises of Chapter 5.