Textbook problems from DeFranza and Gagliardi:

- §4.5: 10, 12
- §5.1: 8, 16, 18, 24, 30
- §5.2: 20, 34
- §5.4: 2, 4 (feel free to use software for particularly onerous computations)

Supplemental problems:

Feel free to use software for the more onerous computations in the following problems.

1. Let T be the transition matrix from problem 5.4.4, i.e.
$$T = \begin{pmatrix} 0.6 & 0.3 & 0.4 \\ 0.1 & 0.4 & 0.3 \\ 0.3 & 0.3 & 0.3 \end{pmatrix}.$$
   (a) Diagonalize the matrix T.
   (b) Find an explicit formula for T^n (in the form shown in class). Use your formula to check your answers to part (b) of 5.4.4.
   (c) Determine $\lim\limits_{n\to\infty} T^n$, as a matrix.
2. *This problem has been removed*; the original Supplement problem #2 (on Fibonacci numbers) will instead be covered in the lab on 4/24.
3. Define a sequence (similar to the Fibonacci numbers, but slightly different) $G_0, G_1, G_2, \cdots$ as follows: $G_0 = 0,\ G_1 = 1$, and $G_n = G_{n-1} + 2G_{n-2}$ for all $n \geq 2$. The sequence begins $0, 1, 1, 3, 5, 11, 21, \cdots$. Following the same method was used to find a formula for the Fibonacci numbers in the lab, find an explicit formula for the number G_n in terms of n. (Note: this eigenvalues involved will be integers, unlike when working with Fibonacci numbers; the computations in this problem are much easier to do by hand).

(Same "important notes" and "submission instructions" apply as before; omitted to save space.)