Math 2270-004
Homework due April 4.

5.4 Matrices for linear transformations as a framework to understand change of basis, diagonalization, similar matrices, and more.
1, **3**, **5**, **11**, **13**, **17**.

5.5 Complex eigenvalues and eigenvectors. 2 by 2 matrices with complex eigendata are similar to rotation-dilation matrices.
1, **7**, **11**, **13**.

5.6 Discrete dynamical systems
1, **3**, **4**, **5**.

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**.
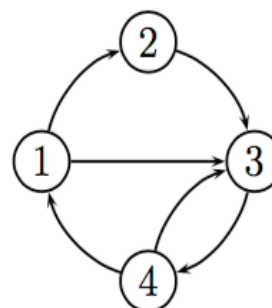

6.1 dot product, length, orthogonality
1, 3, **5**, **7**, **9**, **11**, **13**, 15, **17**, **19**, **23**. (In 23, do note that the Pythagorean Theorem holds.)

6.2 orthogonal sets
1, **3**.

Play the google game!

Transition matrix for problem **1**, to a large power:

Input:

$$\begin{pmatrix} 0 & 0 & 0 & 0.5 \\ 0.5 & 0 & 0 & 0 \\ 0.5 & 1 & 0 & 0.5 \\ 0 & 0 & 1 & 0 \end{pmatrix}^{30}$$

Result:

$$\begin{pmatrix} 0.181842 & 0.181658 & 0.181942 & 0.181723 \\ 0.0908937 & 0.091013 & 0.0908289 & 0.090971 \\ 0.363665 & 0.363445 & 0.363784 & 0.363523 \\ 0.3636 & 0.363884 & 0.363445 & 0.363784 \end{pmatrix}$$