

Math 217 - October 25, 2010

- Systems, matrices, eigenvalues and eigenvectors

1. Find the eigenvalues and eigenvectors for the matrix A .

What is the general solution to $X' = AX$?

$$A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$$

2. Find the eigenvalues and eigenvectors for the matrix A .

What is the general solution to $X' = AX$?

$$A = \begin{bmatrix} 1 & 9 \\ 4 & 1 \end{bmatrix}$$

3. Find the eigenvalues and eigenvectors for the matrix A .

What is the general solution to $X' = AX$?

$$A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

4. Find the eigenvalues and eigenvectors for the matrix A .

What is the general solution to $X' = AX$?

$$A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$$

Lecture Problems

5. Complex eigenvalues and eigenvectors. Find the eigenvalues and eigenvectors of

$$A = \begin{bmatrix} 3 & -1 \\ 4 & 3 \end{bmatrix}$$

6. What is the general the solution to $X' = AX$ where A is in the previous problem?

7. Solve $X' = AX$ where $A = \begin{bmatrix} 1 & -1 \\ 9 & 1 \end{bmatrix}$.