Goals of this recitation

- Prep For Final

Contents

1. Generalised Eigen Vectors

1.1. **Why and when.** Generalised Eigen vectors are done when we don't have enough eigen vectors. They are as a "last resort" when an eigenvalue has a multiplicity greater than one rather than a guarantee. This is important as if you shouldn't use eigenvectors, you may make an impossible question which means you won't be able to solve it.

So an example of when we use generalised eigen vectors is a situation where we have a matrix A and we have the eigenvalue 3 with a multiplicity 2. If we find only one eigen vector for this eigenvalue, we would use generalised eigenvectors. If we find two we don't. **We only use generalised eigenvectors if we don't have enough**

1.2. **Exercises.** Find the eigenvectors

(1)

$$x' = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix} x$$

(2)

$$x' = \begin{bmatrix} 0 & 1 & 1 \\ 2 & 1 & -1 \\ 0 & -1 & 1 \end{bmatrix} x$$

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