

Math 290A, Tuesday, May 5

Problem session

Wed - Exam R

- matrix representations

- Sage RREF
Determinants
Eigen-stuff

Fri - Group office hours
May 8 10-noon Pacific

Final Exam

- Comprehensive

- Sage

- Tuesday, May 12

- Two-hour design (~6/7 pages)

- Three-hour limit

- 9-12 Pacific

- 8-11 by appointment

- Writing R

CB.C41 $S_{22} = 2 \times 2$ symmetric matrices

$$Q: S_{22} \rightarrow S_{22} \quad Q\left(\begin{bmatrix} a & b \\ b & c \end{bmatrix}\right) = \begin{bmatrix} 25a + 18b + 30c & -16a - 11b - 20c \\ -16a - 11b - 20c & -11a - 9b - 12c \end{bmatrix} \quad \text{eigen-stuff?}$$

$$B = \left\{ \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix} \right\} \quad M_{B,B}^Q = \begin{bmatrix} 25 & 18 & 30 \\ -16 & -11 & -20 \\ -11 & -9 & -12 \end{bmatrix}$$

Eigen-stuff of $M_{B,B}^Q$ (Chapter EE) "on sight"

$$E(-2) = \left\langle \left\{ \begin{bmatrix} -6 \\ 4 \\ 3 \end{bmatrix} \right\} \right\rangle, \quad E(1) = \left\langle \left\{ \begin{bmatrix} -2 \\ 1 \\ 1 \end{bmatrix} \right\} \right\rangle, \quad E(3) = \left\langle \left\{ \begin{bmatrix} -3 \\ 2 \\ 1 \end{bmatrix} \right\} \right\rangle$$

Basis of \mathbb{C}^3 \nearrow
Coordination Principle (Theorems CLF, CSS) apply β_B^{-1}

$$C = \left\{ \begin{bmatrix} -6 & 4 \\ 4 & 3 \end{bmatrix}, \begin{bmatrix} -2 & 1 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} -3 & 2 \\ 2 & 1 \end{bmatrix} \right\}$$

basis of S_{22} , eigenvectors of Q

$$M_{C,C}^Q = \begin{bmatrix} -2 & 0 \\ 0 & 3 \end{bmatrix}$$