

21001, Section 01, Linear Algebra and applications
HW 11 (EXTRA, EXTRA!!), DUE Wednesday, May 4
Instructor: Prof. Artem Zvavitch
GOOD LUCK!!!

Problem 1. Consider matrix A such that

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

Please solve $Ax = \lambda x$ for all numbers λ and vectors x .

Problem 2. Find eigenvalues and corresponding eigenvectors of
a)

$$A = \begin{bmatrix} 1 & -1 & 4 \\ 0 & 1 & 1 \\ 0 & 0 & 2 \end{bmatrix},$$

b)

$$B = \begin{bmatrix} 6 & -3 & 2 \\ -2 & 1 & 2 \\ 0 & 0 & -3 \end{bmatrix}.$$

Problem 3. Is it true that matrices A and B from Problem 2 are similar?

Problem 4. Please, check if matrices A and B from Problem 2 are diagonalizable, If yes, please find a corresponding diagonal matrix.