Seminar 4 April 2023

Ex 1. ( Lecture 6 - 2021 . png - aici e rezolvat)

a) Prove that $A = \begin{pmatrix} 1 & 3 \\ 1 & -1 \end{pmatrix}$ is diagonalizable over $\mathbb{R}$.

b) Using the eigenvalues and the eigenvectors of $A$, find two linearly indep. solutions of $X' = AX$. Then write the general solution.

c) Using the notation $X = \begin{pmatrix} x \\ y \end{pmatrix}$ write by components the system $X' = AX$ and its general solution found at b).

d) Find the general sol. of $X' = AX$ using the reduction method.

e) Find $e^{tA}$ using the general solution of $X' = AX$ and that $E(t) = e^{tA}$ satisfies $E'(t) = A E(t)$ for all $t \in \mathbb{R}$ and $E(0) = I_2$.

f) Find $e^{tA}$ using the eigenvalues and eigenvectors of $A$.

Urmatoarele:

Pb. 24, pb 2, 6b ... din Problems - Dynsystems.pdf (în general) care sunt rezolvate în Sem 4 - notes - 2021. pdf (în Profii)