

Homework: Math 286

1) Find the matrix exponential e^{tA} where

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

2) Find the matrix exponential e^{tA} where

$$A = \begin{pmatrix} 2 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{pmatrix}$$

Find the solution to

$$\frac{d\vec{x}}{dt} = \begin{pmatrix} 2 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{pmatrix} \vec{x} + \begin{pmatrix} 0 \\ 0 \\ e^{-2t} \end{pmatrix}$$