

Role of eigen vector for e^{At}

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governing equation:

$$\dot{x} = x - 2y$$

$$\dot{y} = 3x - 4y$$

A matrix:

$$A = \begin{bmatrix} 1 & -2 \\ 3 & -4 \end{bmatrix}$$

eigenvalues of A

$$\lambda_1 = -1, \quad \lambda_2 = -2$$

eigenvectors of A

$$\mathbf{x}_1 = \{1, 1\}, \quad \mathbf{x}_2 = \{2, 3\}$$

eigenvectors of e^{At}

$$\mathbf{x}_1 = \{1, 1\}, \quad \mathbf{x}_2 = \{2, 3\}$$