Homework: Confirm that this is the Inverse Generally

$$\mathbf{U} = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

$$\mathbf{U}^{-1} = \frac{1}{|\mathbf{U}|} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

Homework : Confirm in this Specific Case that this is the correct transformation matrix

$$\mathbf{K} = \begin{pmatrix} k & -k \\ -k & k \end{pmatrix}$$

$$\mathbf{U} = \begin{pmatrix} 1 & 1 \\ -1 & 1 \end{pmatrix}$$

Homework: Write equations for the Concentration over time and check their validity

- Note that K is not symmetric; Is it always diagonalizable for any dimension?
- Connected with microscopic reversibility, A similarity transformation (U) symmetrizes it (K'), assuring us that it is always diagonalizable
- HOMEWORK: Show that if U is defined as below, it renders the matrix of rate constants symmetric. A real symmetric matrix is always diagonalizable.

$$\mathbf{U}_{\mathbf{ij}} = \sqrt{P}_i \delta_{ij}$$

$$\mathbf{K}'_{\mathbf{ij}} = \sqrt{\mathbf{K}_{\mathbf{ij}} \mathbf{K}_{\mathbf{ji}}} = \sqrt{P_j / P_i}\, \mathbf{K}_{\mathbf{ij}}$$