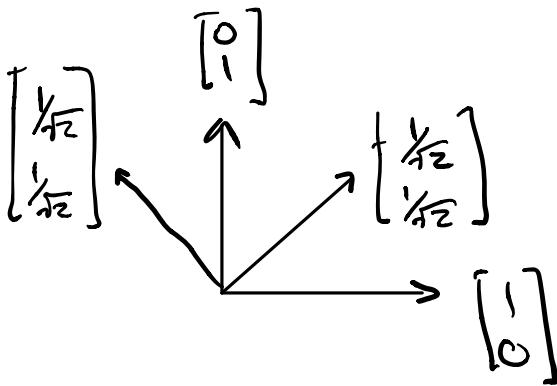


Doing transformations f-bases using e basis.

To rotate a vector u_f in the f-basis,

$= B^{-1} R B u_f$, where B is the matrix of f's basis vectors in the frame of e.



R is a rotation in e.

B^{-1} is the matrix of e's basis vectors in the frame of f.

Example:

$$\underbrace{\frac{1}{\sqrt{2}} \begin{bmatrix} 1 & -1 \\ -1 & 3 \end{bmatrix}}_{B^{-1}} \underbrace{\frac{1}{\sqrt{2}} \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}}_R \underbrace{\begin{bmatrix} 3 & 1 \\ 1 & 1 \end{bmatrix}}_B \underbrace{\begin{bmatrix} x \\ y \end{bmatrix}}_{u_f} = u_f \text{ rotated}.$$

$$B^{-1} R B = \frac{1}{2\sqrt{2}} \begin{bmatrix} -2 & -2 \\ 10 & 6 \end{bmatrix}$$