

$$\begin{pmatrix} \cdot & \cdot & \cdot \end{pmatrix} \begin{pmatrix} a \\ b \\ c \end{pmatrix} = \begin{pmatrix} a \\ b \\ 2a+c \end{pmatrix}$$

$\alpha = ((1,1,1), (1,-1,0), (0,1,1))$

$\varphi(u_1) = u_1; \varphi(u_2) = -u_2; \varphi(u_3) = u_3$   
 $\varphi(u_1) = (1,1,1); \varphi(u_2) = (0,-1,0); \varphi(u_3) = (0,0,-1)$

$(\varphi)_{\alpha, \alpha} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{pmatrix}$

$(\varphi)_{\mathcal{E}, \mathcal{E}} = (id)_{\mathcal{E}, \alpha} \cdot (\varphi)_{\alpha, \alpha} \cdot (id)_{\alpha, \mathcal{E}}$

$\begin{pmatrix} 1 & 1 & 0 \\ 1 & -1 & 1 \\ 1 & 0 & -1 \end{pmatrix} = (id)_{\mathcal{E}, \alpha} \dots \text{INVERSE}$

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$$\begin{vmatrix} 1/3 - \lambda & -2/3 & -2/3 \\ -2/3 & 1/3 - \lambda & -2/3 \\ 0 & -1 + \lambda & 1 - \lambda \end{vmatrix} = (1 - \lambda) \cdot \begin{vmatrix} - & - \\ - & - \\ 0 & -1 \end{vmatrix}$$

$\lambda = 1$

$$\begin{pmatrix} -2/3 & -2/3 & -2/3 \\ -2/3 & -2/3 & -2/3 \\ -2/3 & -2/3 & -2/3 \end{pmatrix} \begin{matrix} 0 \\ 0 \\ 0 \end{matrix}$$

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