Definite, *IsOrthogonal*, *IsSimilar*, *IsUnitary*, *JordanBlockMatrix*, *JordanForm*, *KroneckerProduct*, *LA_Main*, *LUDecomposition*, *LeastSquare*

$$N := 3$$

$$H := \begin{bmatrix} 1 & 0 & -2 & 0 \\ 1 & 2/3 & -\frac{14}{9} & -\frac{100}{27} \\ 1 & 4/3 & -2/9 & -\frac{152}{27} \\ 1 & 2 & 2 & -4 \end{bmatrix}$$

$$K := \begin{bmatrix} 1 & 0 & -2 & 0 \\ 1 & 1/3 & -\frac{17}{9} & -\frac{53}{27} \\ 1 & 2/3 & -\frac{14}{9} & -\frac{100}{27} \\ 1 & 1 & -1 & -5 \end{bmatrix}$$

$$M\text{`LinearAlgebra:-Transpose`} := \begin{bmatrix} 0 & 2 & 0 & 0 \\ 0 & 0 & 4 & 0 \\ 0 & 0 & 0 & 6 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 2 \\ \frac{17}{9} \\ \frac{14}{9} \\ 1 \end{bmatrix}$$

$$P(1) := \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$P(0) := \begin{bmatrix} 3/4 & 0 & 0 & 0 \\ 0 & 3/4 & 0 & 0 \\ 0 & 0 & 3/4 & 0 \\ 0 & 0 & 0 & 3/4 \end{bmatrix}$$

$$W := \begin{bmatrix} -7/4 & 0 & 23/2 & 0 \\ -7/4 & -5/6 & \frac{199}{18} & \frac{560}{27} \\ -7/4 & -5/3 & \frac{175}{18} & \frac{1078}{27} \\ -7/4 & -5/2 & 15/2 & 56 \end{bmatrix}$$

$$S := \begin{bmatrix} -7/4 & 0 & 23/2 & 0 & 2 \\ -7/4 & -5/6 & \frac{199}{18} & \frac{560}{27} & \frac{17}{9} \\ -7/4 & -5/3 & \frac{175}{18} & \frac{1078}{27} & \frac{14}{9} \\ -7/4 & -5/2 & 15/2 & 56 & 1 \end{bmatrix}$$

$$U_0 := \begin{bmatrix} 1 & 0 & -2 & 0 \\ 1 & 2/3 & -\frac{14}{9} & -\frac{100}{27} \\ 1 & 4/3 & -2/9 & -\frac{152}{27} \\ 1 & 2 & 2 & -4 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & -2 & 0 \end{bmatrix}$$

$$U_1 := \begin{bmatrix} 0 & 2 & 0 & -12 \\ 0 & 2 & 8/3 & -\frac{28}{3} \\ 0 & 2 & 16/3 & -4/3 \\ 0 & 2 & 8 & 12 \end{bmatrix}$$

$$\begin{bmatrix} 0 & 2 & 0 & -12 \end{bmatrix}$$

$$V := \begin{bmatrix} -7/4 & 0 & 23/2 & 0 \\ 1 & 0 & -2 & 0 \\ 0 & 2 & 0 & -12 \\ -7/4 & -5/2 & 15/2 & 56 \end{bmatrix}$$

$$\begin{bmatrix} 2 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

$$L := \begin{bmatrix} -7/4 & 0 & 23/2 & 0 & 2 \\ 1 & 0 & -2 & 0 & 0 \\ 0 & 2 & 0 & -12 & 0 \\ -7/4 & -5/2 & 15/2 & 56 & 1 \end{bmatrix}$$

$$Y := \begin{bmatrix} 1/4 & \frac{23}{16} & 0 & 0 \\ -\frac{3}{41} & \frac{21}{164} & \frac{28}{41} & \frac{6}{41} \\ 1/8 & \frac{7}{32} & 0 & 0 \\ -\frac{1}{82} & \frac{7}{328} & \frac{5}{164} & 1/41 \end{bmatrix}$$

$$A := \begin{bmatrix} 1/2 \\ 0 \\ 1/4 \\ 0 \end{bmatrix}$$