

Basic	$\alpha\beta\gamma$	AB $\Gamma$	sin cos	$\geq \div \rightarrow$	$\bar{x}$ CV	$\Sigma \int \Pi$	$\begin{pmatrix} \square & \square \\ \square & \square \end{pmatrix}$	$H_2O$		
$\square^2$	$x^\square$	$\sqrt{\square}$	$\sqrt[\square]{\square}$	$\frac{\square}{\square}$	$\log_\square$	$\pi$	$\theta$	$\infty$	$\int$	$\frac{d}{dx}$
$(2 \times 2)$	$(2 \times 3)$	$(3 \times 3)$	$(3 \times 2)$	$(4 \times 2)$	$(4 \times 3)$	$(4 \times 4)$	$(3 \times 4)$	$(2 \times 4)$	$(5 \times 5)$	$\begin{pmatrix} \square & \dots & \square \\ \square & \ddots & \square \\ \square & \vdots & \square \end{pmatrix}$
$(1 \times 2)$	$(1 \times 3)$	$(1 \times 4)$	$(1 \times 5)$	$(1 \times 6)$	$(2 \times 1)$	$(3 \times 1)$	$(4 \times 1)$	$(5 \times 1)$	$(6 \times 1)$	$(7 \times 1)$

diagonalize

eigenvalues

eigenvectors

gauss jordan

unit

See All ▼

$$\begin{pmatrix} \cos\left(\frac{-\pi}{4}\right) & -\sin\left(\frac{-\pi}{4}\right) \\ \sin\left(\frac{-\pi}{4}\right) & \cos\left(\frac{-\pi}{4}\right) \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) - i\sin\left(\frac{\pi}{4}\right) & 0 \\ 0 & \cos\left(\frac{\pi}{4}\right) + i\sin\left(\frac{\pi}{4}\right) \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) & -\sin\left(\frac{\pi}{4}\right) \\ \sin\left(\frac{\pi}{4}\right) & \cos\left(\frac{\pi}{4}\right) \end{pmatrix}$$

Solution

$$\begin{pmatrix} \frac{1}{\sqrt{2}} & i\frac{\sqrt{2}}{2} \\ i\frac{\sqrt{2}}{2} & \frac{1}{\sqrt{2}} \end{pmatrix}$$

**Solution steps**

$$\begin{pmatrix} \cos\left(\frac{-\pi}{4}\right) & -\sin\left(\frac{-\pi}{4}\right) \\ \sin\left(\frac{-\pi}{4}\right) & \cos\left(\frac{-\pi}{4}\right) \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) - i\sin\left(\frac{\pi}{4}\right) & 0 \\ 0 & \cos\left(\frac{\pi}{4}\right) + i\sin\left(\frac{\pi}{4}\right) \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) & -\sin\left(\frac{\pi}{4}\right) \\ \sin\left(\frac{\pi}{4}\right) & \cos\left(\frac{\pi}{4}\right) \end{pmatrix}$$

$$\begin{pmatrix} \cos\left(\frac{-\pi}{4}\right) & -\sin\left(\frac{-\pi}{4}\right) \\ \sin\left(\frac{-\pi}{4}\right) & \cos\left(\frac{-\pi}{4}\right) \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) - i\sin\left(\frac{\pi}{4}\right) & 0 \\ 0 & \cos\left(\frac{\pi}{4}\right) + i\sin\left(\frac{\pi}{4}\right) \end{pmatrix} = \begin{pmatrix} \frac{1}{2} - i\frac{1}{2} & \frac{1}{2} + i\frac{1}{2} \\ -\frac{1}{2} + i\frac{1}{2} & \frac{1}{2} + i\frac{1}{2} \end{pmatrix}$$

$$= \begin{pmatrix} \frac{1}{2} - i\frac{1}{2} & \frac{1}{2} + i\frac{1}{2} \\ -\frac{1}{2} + i\frac{1}{2} & \frac{1}{2} + i\frac{1}{2} \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) & -\sin\left(\frac{\pi}{4}\right) \\ \sin\left(\frac{\pi}{4}\right) & \cos\left(\frac{\pi}{4}\right) \end{pmatrix}$$

$$\begin{pmatrix} \frac{1}{2} - i\frac{1}{2} & \frac{1}{2} + i\frac{1}{2} \\ -\frac{1}{2} + i\frac{1}{2} & \frac{1}{2} + i\frac{1}{2} \end{pmatrix} \begin{pmatrix} \cos\left(\frac{\pi}{4}\right) & -\sin\left(\frac{\pi}{4}\right) \\ \sin\left(\frac{\pi}{4}\right) & \cos\left(\frac{\pi}{4}\right) \end{pmatrix} = \begin{pmatrix} \frac{1}{\sqrt{2}} & i\frac{\sqrt{2}}{2} \\ i\frac{\sqrt{2}}{2} & \frac{1}{\sqrt{2}} \end{pmatrix}$$

$$= \begin{pmatrix} \frac{1}{\sqrt{2}} & i\frac{\sqrt{2}}{2} \\ i\frac{\sqrt{2}}{2} & \frac{1}{\sqrt{2}} \end{pmatrix}$$