Cartesian Unit Vectors

The inverse of a two-by-two matrix is given by

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix}^{-1} = \frac{1}{ad - bc} \begin{pmatrix} -d & -b \\ -c & -a \end{pmatrix}.$$

Given

$$\hat{\boldsymbol{r}} = \cos\theta \boldsymbol{i} + \sin\theta \boldsymbol{j}, \quad \hat{\boldsymbol{\theta}} = -\sin\theta \boldsymbol{i} + \cos\theta \boldsymbol{j},$$

invert a two-by-two matrix to solve for $\boldsymbol{i}$ and $\boldsymbol{j}$.

Completed

Go to next item