A = {{-0.8, -1}, {1, 0}}

$$\{\{-0.8, -1\}, \{1, 0\}\}$$

Eigenvalues[A]

$$\{-0.4 + 0.916515\,i, -0.4 - 0.916515\,i\}$$

MatrixForm[H = Eigenvectors[A]^T]

$$\begin{pmatrix} 0.707107 + 0.\,i & 0.707107 + 0.\,i \\ -0.282843 - 0.648074\,i & -0.282843 + 0.648074\,i \end{pmatrix}$$

MatrixForm[H1 = Inverse[H]]

$$\begin{pmatrix} 0.707107 + 0.308607\,i & 0. + 0.771517\,i \\ 0.707107 - 0.308607\,i & -5.55112 \times 10^{-17} - 0.771517\,i \end{pmatrix}$$

d = DiagonalMatrix[Eigenvalues[A]]

$$\{\{-0.4 + 0.916515\,i, 0. + 0.\,i\}, \{0. + 0.\,i, -0.4 - 0.916515\,i\}\}$$

H[[1, 1]]^2

$$0.5 + 0.\,i$$