```
A = {{a, 1 - a}, {1 - b, b}}
```

$$\{\{a, 1-a\}, \{1-b, b\}\}$$

```
MatrixForm[HH = Eigenvectors[A]^T]
Eigenvalues[A]
```

$$\begin{pmatrix} 1 & -\frac{-1+a}{-1+b} \\ 1 & 1 \end{pmatrix}$$

$$\{1, -1+a+b\}$$

```
MatrixForm[hh = Inverse[HH]]
```

$$\begin{pmatrix} \frac{1}{1-\frac{1}{-1+b}+\frac{a}{-1+b}} & \frac{-1+a}{\left(1-\frac{1}{-1+b}+\frac{a}{-1+b}\right)(-1+b)} \\ -\frac{1}{1-\frac{1}{-1+b}+\frac{a}{-1+b}} & \frac{1}{1-\frac{1}{-1+b}+\frac{a}{-1+b}} \end{pmatrix}$$

```
d = DiagonalMatrix[{1, 0}]
```

$$\{\{1, 0\}, \{0, 0\}\}$$

```
MatrixForm[HH.d.hh]
```

$$\begin{pmatrix} \frac{1}{1-\frac{1}{-1+b}+\frac{a}{-1+b}} & \frac{-1+a}{\left(1-\frac{1}{-1+b}+\frac{a}{-1+b}\right)(-1+b)} \\ \frac{1}{1-\frac{1}{-1+b}+\frac{a}{-1+b}} & \frac{-1+a}{\left(1-\frac{1}{-1+b}+\frac{a}{-1+b}\right)(-1+b)} \end{pmatrix}$$

```
MatrixForm[HH = Eigenvectors[A^T]]
Eigenvalues[A]
```

$$\begin{pmatrix} -\frac{1-b}{-1+a} & 1 \\ -1 & 1 \end{pmatrix}$$

$$\{1, -1+a+b\}$$