

$$A = \begin{bmatrix} 4 & 6 \\ -1 & -1 \end{bmatrix}$$

$$T(\vec{x}) = A\vec{x}$$

find B s.t. $[T]_B$ is diag.

find eigenstuff

$$A = P D P^{-1}$$

$$\begin{aligned} |A - \lambda I| &= \begin{vmatrix} 4-\lambda & 6 \\ -1 & -1-\lambda \end{vmatrix} = (4-\lambda)(-1-\lambda) + 6 = -4 - 4\lambda + \lambda + \lambda^2 \\ &= \lambda^2 - 3\lambda - 4 = (\lambda - 4)(\lambda + 1) = 0 \end{aligned}$$

$$\lambda = 4, -1$$

$$B = \begin{bmatrix} 4 & 0 \\ 0 & -1 \end{bmatrix}$$