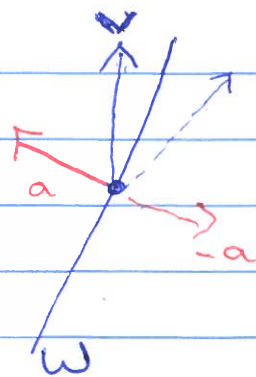


Let A be the matrix for reflecting through the plane

$$W = \text{span} \left\{ \begin{bmatrix} 1 \\ 4 \\ -2 \end{bmatrix}, \begin{bmatrix} 0 \\ 2 \\ -3 \end{bmatrix} \right\}$$



1-eigenspaces of $A = W = \text{span} \left\{ \begin{bmatrix} 1 \\ 4 \\ -2 \end{bmatrix}, \begin{bmatrix} 0 \\ 2 \\ -3 \end{bmatrix} \right\}$

-1-eigenspace of $A = W^\perp$
= all vectors orthogonal to

$$= \text{null} \begin{pmatrix} 1 & 4 & -2 \\ 0 & 2 & -3 \end{pmatrix}$$

$$\stackrel{\text{RREF}}{=} \text{null} \begin{pmatrix} 1 & 0 & 4 \\ 0 & 1 & -3/2 \end{pmatrix} = \text{span} \left\{ \begin{bmatrix} -4 \\ 3/2 \\ 1 \end{bmatrix} \right\}$$

$$D = \begin{bmatrix} 1 & & \\ & 1 & \\ & & -1 \end{bmatrix} \quad P = \begin{bmatrix} 1 & 0 & -4 \\ 4 & 2 & 3/2 \\ -2 & -3 & 1 \end{bmatrix}$$

$$A = PDP^{-1}$$