# Quiz 13 MTH 335 Fall 2026

Sunday, November 8, 2026 9:30 AM

$$\begin{bmatrix} 1 & 2 \\ 2 & -2 \end{bmatrix}$$

$$\lambda^2 - (1+(-2))\lambda + ((1)(-2) - 2(2)) = 0$$

$$\lambda^2 + \lambda - 6 = 0$$

$$(\lambda+3)(\lambda-2) = 0$$

$$\lambda = -3, 2$$

e-vect for $\lambda = -3$

$$A - \lambda I = \begin{bmatrix} 4 & 2 \\ 2 & 1 \end{bmatrix}$$

$$4v_1 + 2v_2 = 0$$

$$v_2 = -2v_1$$

$$\vec{v} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} = \begin{bmatrix} v_1 \\ -2v_1 \end{bmatrix} = v_1 \begin{bmatrix} 1 \\ -2 \end{bmatrix}$$

$\Rightarrow \left\{-3, \begin{bmatrix} 1 \\ -2 \end{bmatrix}\right\}$ is an eigenpair

for $\lambda = 2$

$$A - \lambda I = \begin{bmatrix} -1 & 2 \\ 2 & -4 \end{bmatrix}$$

$$-v_1 + 2v_2 = 0$$

$$v_1 = 2v_2$$

$$\vec{v} = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix} = \begin{bmatrix} 2v_2 \\ v_2 \end{bmatrix} = v_2 \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$

$\Rightarrow \vec{v} = \left\{2, \begin{bmatrix} 2 \\ 1 \end{bmatrix}\right\}$ is an eigenpair