$\lambda_1 = -21.125$

$$\begin{bmatrix} 4-\lambda & 8 & -1 & -2 \\ -2 & -\lambda-9 & -2 & -4 \\ 0 & 10 & 5-\lambda & -10 \\ -1 & -13 & -14 & -\lambda-13 \end{bmatrix}$$

$$= \begin{bmatrix} 25.125 & 8 & -1 & -2 \\ -2 & 12.125 & -2 & -4 \\ 0 & 10 & 26.125 & -10 \\ -1 & 13 & -14 & 8.125 \end{bmatrix} \to B$$

Note:
$4-\lambda = 4-(-21.125) = 25.125$
$-\lambda-9 = -(-21.125)-9 = 12.125$
$5-\lambda = 5-(-21.125) = 26.125$
$-\lambda-13 = -(-21.125)-13 = 8.125$

Solve: $B\bar{x} = \bar{0}$

$$= \begin{bmatrix} 25.125 & 8 & -1 & -2 \\ -2 & 12.125 & -2 & -4 \\ 0 & 10 & 26.125 & -10 \\ -1 & -13 & -14 & 8.125 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$= \left[\begin{array}{cccc|c} 25.125 & 8 & -1 & -2 & 0 \\ -2 & 12.125 & -2 & -4 & 0 \\ 0 & 10 & 26.125 & -10 & 0 \\ -1 & -13 & -14 & 7.125 & 0 \end{array}\right]$$

$R_2 \to R_2 - 0.0796 R_1$
~~$R_4 \to R_4 + R_3$~~
$R_4 \to R_4 - 0.054 R_2$

If we continue with the Gaussian elimination it gives $(x, y, z, w) = (0, 0, 0, 0)$, which isn't possible for eigenvalue so in a calculator the null space of this vector is

$$\begin{bmatrix} -0.027 \\ 0.365 \\ 0.743 \\ 1 \end{bmatrix} = \text{eigen vector.}$$

$$\text{Importance}(\lambda_i) = \frac{|\lambda_i|}{\sum_{j=1}^{n} |\lambda_j|} \cdot 100\%$$

$$|\lambda_1| + |\lambda_2| + |\lambda_3| + |\lambda_4|$$

$$= 11.054 + 2.675 + 21.125 + 5.604$$

$$= \boxed{40.458}$$

∴ they are all positive because of the absolute value

$\lambda_1 = 11.054 \rightarrow \frac{11.054}{40.458} \times 100 = \underline{27.32\%}$

$\lambda_2 = 2.675 \rightarrow \frac{2.675}{40.458} \times 100 = \underline{6.61\%}$

$\lambda_3 = -21.125 \rightarrow \frac{21.125}{40.458} \times 100 = \underline{52.21\%}$

$\lambda_4 = -5.604 \rightarrow \frac{5.604}{40.458} \times 100 = \underline{13.85\%}$

∴ $\lambda_3 = -21.125$ accounts for over 52%.
because of this we are more likely to focus on the direction of λ_3 in how the matrix acts.