Inverse power method :-

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix} \quad X_0 = (1, 1, 1)^T \quad , \quad \sigma = 9$$

[I] $X_0 = (1, 1, 1)^T$

$AX = [6 \quad 9 \quad 12]^T$ { divide by smallest value }

Thus,

$\lambda^{(1)} = 6$

$\hat{X}^{(1)} = [1 \quad 1.5 \quad 2]^T$

$X^{(1)} = \dfrac{\hat{X}^{(1)}}{\| X^{(1)} \|_2} = \dfrac{1}{2.693} [0.371 \quad 0.557 \quad 0.742]^T$

soon...

[II] $AX^{(1)} = [3.714 \quad 5.385 \quad 7.056]^T$

$\lambda^{(2)} = 3.714$

$\hat{X}^{(2)} = [1 \quad \cancel{0.684} \; 1.449 \quad 1.899]^T$ & $\|\hat{X}\|_2 = 2.589$

$X^{(2)} = \dfrac{\hat{X}^{(2)}}{\|\hat{X}\|_2} = [\cancel{0.443} \quad \cancel{0.305} \quad \cancel{0.841}]^T$

$[0.386 \quad 0.559 \quad 0.733]$