Step-1

First we need to find pivots of $A-\frac{1}{2}I$.

$$A-\frac{1}{2}I=\begin{pmatrix}2.5 & 3 & 0\\ 3 & 5.9 & 7\\ 0 & 7 & 7.5\end{pmatrix}$$

Apply $R_2 \to R_2-\frac{3}{2.5}R_1$

$$\Rightarrow A-\frac{1}{2}I=\begin{pmatrix}2.5 & 3 & 0\\ 0 & 5.9 & 7\\ 0 & 7 & 7.5\end{pmatrix}$$

Apply $R_3 \to R_3-\frac{7}{5.9}R_2$

$$\Rightarrow A-\frac{1}{2}I=\begin{pmatrix}2.5 & 3 & 0\\ 0 & 5.9 & 7\\ 0 & 0 & -0.805\end{pmatrix}$$

Thus the pivots are $\boxed{2.5, 5.9 \text{ and } -0.81}$.

So, $\boxed{\text{one Eigen value of } A-\frac{1}{2}I \text{ is negative}}$.

$A-\frac{1}{2}I$ has negative pivot, so that A has Eigen value smaller than $\frac{1}{2}$.