Eigenvalues and Eigenvectors Calculations

GROUP MEMBERS:
1. _____________________________
2. ______________________________

Goal: Calculate eigenvectors and eigenvalues for the matrix

\[
A = \begin{bmatrix} 4 & 2 \\ 3 & -1 \end{bmatrix}
\]

Person 1. Write the matrix \([A - \lambda \text{ Id}] =

Person 2. Find the characteristic polynomial by setting \( \text{Det}[A - \lambda \text{ Id}] = 0 \).

Find the two eigenvalues \( \lambda_1 \) and \( \lambda_2 \).

Person 1: Find the eigenvector that goes with eigenvalue \( \lambda_1 \).
Person 2: Find the eigenvector that goes with eigenvalue $\lambda_2$.

Team: Plot the eigenvectors $\vec{v}_1, \vec{v}_2$ on the xy plane. Also draw the image of these eigenvectors $A\vec{v}_1, A\vec{v}_2$. (Think stretching!)