Find the eigenvalues $\lambda_1 < \lambda_2 < \lambda_3$ and corresponding eigenvectors of the matrix

$$A = \begin{bmatrix} -3 & 12 & -64 \\ 0 & 1 & 16 \\ 0 & 0 & 5 \end{bmatrix}.$$

The eigenvalue $\lambda_1 = \square$ corresponds to the eigenvector $\begin{bmatrix} \square \\ \square \\ \square \end{bmatrix}$.

The eigenvalue $\lambda_2 = \square$ corresponds to the eigenvector $\begin{bmatrix} \square \\ \square \\ \square \end{bmatrix}$.

The eigenvalue $\lambda_3 = \square$ corresponds to the eigenvector $\begin{bmatrix} \square \\ \square \\ \square \end{bmatrix}$.

Find the eigenvalues $\lambda_1 < \lambda_2 < \lambda_3$ and corresponding eigenvectors of the matrix

$$A = \begin{bmatrix} -3 & 12 & -64 \\ 0 & 1 & 16 \\ 0 & 0 & 5 \end{bmatrix}.$$

The eigenvalue $\lambda_1 = \boxed{-3}$ corresponds to the eigenvector $\begin{bmatrix} \boxed{-1} \\ \boxed{0} \\ \boxed{0} \end{bmatrix}$.

The eigenvalue $\lambda_2 = \boxed{1}$ corresponds to the eigenvector $\begin{bmatrix} \boxed{3} \\ \boxed{1} \\ \boxed{0} \end{bmatrix}$.

The eigenvalue $\lambda_3 = \boxed{5}$ corresponds to the eigenvector $\begin{bmatrix} \boxed{2} \\ \boxed{-4} \\ \boxed{-1} \end{bmatrix}$.