Class Problem 5 $\,$

Consultation is fine, but no electronics, please.

(1) (20 fictional points) Diagonalize the matrix $A = \begin{bmatrix} 6 & -5 \\ 5 & 0 \end{bmatrix}$.

(2) (2 fictional points) What do you notice about the two eigenvalues? Also, what about the two eigenvectors?