Exercises on diagonalization and powers of A

Problem 22.1: (6.2 #6. *Introduction to Linear Algebra:* Strang) Describe all matrices S that diagonalize this matrix A (find all eigenvectors):

$$A = \begin{bmatrix} 4 & 0 \\ 1 & 2 \end{bmatrix}.$$

Then describe all matrices that diagonalize A^{-1}.

Problem 22.2: (6.2 #16.) Find Λ and S to diagonalize A :

$$A = \begin{bmatrix} .6 & .9 \\ .4 & .1 \end{bmatrix}.$$

What is the limit of Λ^k as $k \to \infty$? What is the limit matrix of $S\Lambda^k S^{-1}$? In the columns of this matrix you see the _____.

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