Practice problems.

(a) Find a diagonal form for the following matrix.

$$A = \begin{bmatrix} 0 & 3 & 6 \\ 0 & 1 & 4 \\ 0 & 0 & 2 \end{bmatrix}.$$

What is the diagonalizing matrix?

(b) How many different diagonal forms does A have?

(c) Suppose that D is a diagonal form for A, so $A = SDS^{-1}$. Use this information to calculate the power A^{1000}.