

Name:

1. Answer the following statements “true” or “false.”

(a) Suppose A and B are 2×2 matrices which each have 2 as one of their eigenvalues. Then AB has 4 as one of its eigenvalues.

(b) Suppose A and B are 2×2 matrices which each have 2 as one of their eigenvalues. Then $A + B$ has 4 as one of its eigenvalues.

(c) Suppose A is a 2×2 nilpotent matrix which is diagonalizable. Then $A = 0$.

2. Find matrices S and J such that J is in Jordan canonical form and $A = SJS^{-1}$.

$$A = \begin{pmatrix} -2 & 9 \\ -1 & 4 \end{pmatrix}$$