

MATH 117: Daily Assignment 10

WRITE YOUR NAME HERE

August 19, 2022

See the [daily assignment webpage](#) for due dates, templates, and assignment description. Try to explain your reasoning and justify your computations for every problem. You should not appeal to any theorems that we have not proved yet.

1. We proved in the lectures that similar matrices have the same characteristic polynomial. Do similar matrices have the same minimal polynomial? Explain.

2. Let $A = \begin{pmatrix} -8 & -10 & -1 \\ 7 & 9 & 1 \\ 3 & 2 & 0 \end{pmatrix} \in \mathbb{R}^{3 \times 3}$ and $B = \begin{pmatrix} -3 & 2 & -4 \\ 4 & -1 & 4 \\ 4 & -2 & 5 \end{pmatrix} \in \mathbb{R}^{3 \times 3}$. Determine whether or not A and B are similar.

3. Suppose that $A \in \mathbb{C}^{n \times n}$ satisfies $A^3 = A$. Is A diagonalizable? What about if $A \in F^{n \times n}$, where F is an arbitrary field?