MATHEMATICS 132, WINTER 2021, QUIZ 2

Directions. The answers to this quiz are to be submitted to the instructor of your discussion section by **11:59 P.M.** on **Friday, March 5**. Please include your name, student identification number, and discussion section number on the worked out quiz.

1. Suppose that two $n \times n$ matrices A and B are similar. Prove that their adjoints A^* and B^* are also similar when the scalars are either real or complex numbers (*i.e.*, the result is true in both cases).

2. Give examples of matrices A and B of the same size such that $\exp(A+B) \neq \exp(A)\exp(B)$. In fact, there are examples in the 2×2 case where the entries are not at all complicated.

3. Suppose that the nilpotent 5×5 matrix N is also an elementary Jordan matrix. Show that N is similar to its adjoint N^*.

Any valid approach to finding the answers is acceptable (but you may be asked to justify a procedure if it is nonstandard). Although you may consult with other students about material related to these problems, the quiz is **NOT** collaborative; the answers you submit must be your own work and no one elses.