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2 February 2023
Due Tuesday 7 February 2023, 9:30 am

Linear Algebra, Math 147-002
Homework set #4

Explain your answers in as much detail as possible. Check your examples and results. You need to explain every step of your logic, development and calculation. No credit will be given without the intermediate steps or the explanations.

1. (this is exercise 3.6.5)
(a) If A and B are symmetric matrices that commute, prove that the product AB is also symmetric.
(b) Give an example of a pair of symmetric matrices A and B which do not commute and that their product is nonsymmetric.

2. Let A be $n \times n$. Is it true that $A^T A = AA^T$? Explain why or why not.