DATA 605 - Discussion 3

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02/13/2018

Page 419, Exercise T17

Suppose that B is a nonsingular matrix. Prove that AB is similar to BA.

Since B is nonsingular, then it's invertible (Theorem CINM, page 200).
By Theorem MIMI (page 203), $(B^{-1})^{-1} = B$.
By Definition MI (page 194), $B^{-1}B = I$.
By Theorem MMIM (page 182), $BI = B$.

Taking this all together, $(B^{-1})^{-1}AB(B^{-1}) = BA = AB$.