# Math 308 Discussion Problems
# Spring 2017

8. Find an *invertible* $n \times n$ matrix $A$ and an $n \times n$ matrix $B$ such that $\text{rank}(AB) \neq \text{rank}(BA)$, or explain why such matrices cannot exist.

9. Find a $3 \times 4$ matrix $A$ with nullity 2 and with

$$\text{col}(A) = \text{span}\left\{ \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 4 \\ -3 \\ 7 \end{bmatrix}, \begin{bmatrix} 3 \\ -2 \\ 5 \end{bmatrix} \right\},$$

or explain why such a matrix can't exist.