Math 430 Fall 2016 Homework #6

Due Oct. 18, Tue in class

1. Textbook, Section 4.5, page 220: 12, 18;
2. Textbook, Section 4.6, page 237: 9;
3. Textbook, Section 4.7, page 247: 2;
4. Let A be an $m \times n$ matrix, and P be an $m \times m$ invertible matrix. Show that $\text{rank}(PA) = \text{rank}(A)$.
5. Let A be an $m \times n$ matrix and B be an $n \times p$ matrix. Show that $\text{rank}(AB) = \text{rank}(A) - \dim(N(B^T) \cap R(A^T))$. (*Hint*: think of the rank of $(AB)^T$.)