Math 430 Fall 2016 Homework #7

Due Oct. 25, Tue in class

1. Textbook, Section 4.7, page 247: 8, 9, 19(a);
2. Textbook, Section 4.8, page 257: 3, 9;
3. Textbook, Section 5.1, page 276: 5, 6;
4. Let A and B be two $n \times n$ matrices which are similar. Show that $\text{rank}(A) = \text{rank}(B)$. (*Hint*: we have shown $\text{rank}(PA) = \text{rank}(A)$ and $\text{rank}(AQ) = \text{rank}(A)$ for invertible matrices P and Q.)
5. Let A and B be two $n \times n$ matrices which are similar, and α be a scalar. Show that $A + \alpha I$ and $B + \alpha I$ are similar, where I denotes the $n \times n$ identity matrix.