Math 430 Fall 2016 Homework #2

Due Sept. 20, Tue in class

1. Textbook, Section 3.6, page 113: 7, 12(b);
2. Textbook, Section 3.7, page 122: 3(b-c), 5, 10 (*Hint*: use the block matrix multiplication rule);
3. Suppose that A, B and $A+B$ are all invertible. Show that $A(A+B)^{-1}B = (A^{-1}+B^{-1})^{-1}$.
4. Recall that for a skew symmetric matrix S and any scalar α, we have shown that $I+\alpha S$ is invertible. Let $A = (I-S)(I+S)^{-1}$.
   (1) Show that $A^T = (I-S)^{-1}(I+S)$;
   (2) Show that $(I-S)^{-1}(I+S) = (I+S)(I-S)^{-1}$ and use it to show $A^{-1} = A^T$.