Math 430 Fall 2016 Homework #13

Do not turn in

1. Textbook, Section 7.1, page 500: 9(a), 10(a), 13, 18(a);
2. Textbook, Section 7.2, page 520: 4, 5;
3. Textbook, Section 7.5, page 556: 4, 10;
4. Let A be an $n \times n$ matrix. Show that λ is an eigenvalue of A if and only if $\lambda + \mu$ is an eigenvalue for the matrix $A + \mu I$ for any scalar μ.
5. Let A be an $n \times n$ positive definite (P.D.) matrix with the smallest positive eigenvalue $\lambda_n > 0$. Show that for any $\mu > -\lambda_n$, $A + \mu I$ is positive definite.
6. Let λ be an eigenvalue of the P.S.D. matrix A, and let $v \in N(A - \lambda I)$. Show that $v^T A v = \lambda \|v\|_2^2$.