Math 430/603 Spring 2017 Homework #11

Due May 9, Tue in class

1. Textbook, Section 6.1, page 472: 1(c), 11, 12;
2. Textbook, Section 6.2, page 483: 5(a);
3. Textbook, Section 7.1, page 500: 9(a), 10(a), 13, 18(a);
4. Let P be an orthogonal matrix. Show that $|\det P| = 1$.
5. Let A be an $n \times n$ real matrix. Show that (i) $\det(A^T A) \geq 0$, and (ii) $\det(A^T A) > 0$ if and only if A is invertible.
6. 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.

The following extra problem(s) are for **Math 603** *students only:*

7. Textbook, Section 6.1, page 472: 8;
8. Textbook, Section 7.1, page 500: 4.