Math 242 fall 2008 comments/hints for some problems in Homework 7.

- 3.1.1 Check the conditions in definition 3.1. For positivity, with $v_i = w_i$ you have $v_1^2 - 2v_1v_2 + bv_2^2$. Use a completing the square argument to write this as a square plus something else.

- 3.2.6 Use Cauchy-Schwarz inequality for $\mathbb{R}^2$ and pick appropriate vectors guided by the left side of the proposed inequality.

- 3.3.13 This is true for inner product norms from Theorem 3.9. Two norms that are not inner product norms are the $L_1$ and $L_\infty$ norms for $\mathbb{R}^n$

- 3.4.10a If $K$ is symmetric so is $K^{-1}$.

- 3.3.31 Use proposition 3.36 and the fact that $K$ is symmetric. For part (b), recall (or recreate) exercise 2.5.39 to get one of these a subset of another. Then use part (a) and Theorem 2.49 to get that they have the same dimension. Then since one contains the other and they have the same dimension they must be the same.