Assignment 4

Prove or disprove that the given solution is correct in each of the problems 1-6 below.

1. p. 69, problem 1a
2. p. 73, problem 1a
3. p. 81, problem 3
4. p. 81, problem 4
5. p. 81, problem 6
6. p. 87, problem 4a
7. In the vector space $L(R^2)$, let T be the transformation defined by

$$T\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \begin{pmatrix} a & b \\ c-3a & d-3b \end{pmatrix}$$

a. Is T linear?

b. Does there exist a 2x2 matrix A such that $AB = T(B)$ for all 2x2 matrices B?

c. Does there exist a 2x2 matrix A such that $BA = T(B)$ for all 2x2 matrices B?

8. p. 88, problem 6(a).
9. p. 97, problem 3 for n=2.
10. p. 97, problem 4 for n=2.