

---

**Homework 3, due Friday 9/17**

1. p. 145, problem 1
2. p. 145, problems 3 (a), (b), (d) and furthermore find the rank for these matrices.
3. Find the row-echelon form for the matrices of the previous problem.
4. p. 152, problem 1 (a) – (f). Ignore the part about Key Theorem 4.13 on rank and solvability, use the methods introduced in class.
5. Solve the following equations system, i.e. determine whether it has a solution, and if it has a solution, find all possible solutions.

$$\begin{array}{rclcrcl} x_1 & + & 2x_2 & - & x_3 & + & 3x_4 & = & 3 \\ 2x_1 & + & 4x_2 & - & 2x_3 & + & 5x_4 & = & 5 \\ & & & & x_3 & + & 3x_4 & = & 5 \end{array}$$

6. Solve the following equations system.

$$\begin{array}{rclcrcl} & & b & + & 3c & + & 4d & = & 2 \\ & & & & 2c & + & 4d & = & -4 \\ 2a & + & 2b & + & 3c & + & 4d & = & 3 \\ 2a & + & b & & & + & d & = & 6 \\ & & 2b & + & 6c & - & 2d & = & 5 \end{array}$$

7. p. 153, problem 4.