

21-241 – Homework assignment Week #1

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Carnegie Mellon University, Fall 2016, Sec. F and G

Reminder

Homework will be given on Fridays and due on the next Friday before 5pm, to me in class or in Andrew Zucker's mailbox in Wean Hall 6113. Late homework will never be accepted without a proper reason. In case of physical absence, electronic submissions by e-mail to both me and Andrew Zucker can be accepted.

Reading

- Read the syllabus online.
- Book: Section 1.1 from Theorem 1.1 until Linear combinations. Section 2.1 and 2.2 until Theorem 2.2.

Exercises (2 + 3 × 3 + 3 = 14 pts)

1. Provide a system of linear equations of your choice that comes from every day's life, science or whatever you want. Describe its origin. Give the solution(s).
2. Book : Sec. 2.1 Exercises 33, 35 and 40, that is :
 - (a) Solve
$$\begin{cases} x - y = 0 \\ 2x + y = 3 \end{cases}$$
 - (b) Solve
$$\begin{cases} x + 5y = -1 \\ -x + y = -5 \\ 2x + 4y = 4 \end{cases}$$
 - (c) Find a system of two linear equations in the variables x_1, x_2, x_3 whose solution set is given by the parametric equations $x_1 = t, x_2 = 1 + t$ and $x_3 = 2 - t$. Find another parametric solution in which the parameter is s and $x_3 = s$.
3. We saw that the game on Figure 1 in the syllabus has infinitely many solutions. How many of them are non-negative integers ? Provide arguments to support your claims.