Worksheet 1.1, Systems of Linear Equations

Worksheet Solutions

A primary goal of this course is to prepare students for more advanced courses that have this course as a pre-requisite. To help us meet this goal, **solutions are not are provided for worksheets**. This is intentional: most upper level courses do not have recitations and solutions for everything. Students in this class are encouraged to ask questions they may have on Piazza, office hours, and with their peers. Calculators and software are also great ways to check your work. All of these methods develop skills that are transferable to higher level courses, and beyond.

Worksheet Exercises

Recitations are meant to be active: students are encouraged to work with other students in recitation. As students are working through exercises, the TA should circulate around the room, helping students. Students may be asked to present their work using a document camera or write a solution on a whiteboard.

1. **Written Explanation Exercise** Answer each the following in one or two sentences.
   (a) What does it mean for a linear system to be consistent?
   (b) How can we determine whether a linear system is consistent?
2. For what values of h is the system consistent?
$$x_1 + hx_2 = 2, \qquad 4x_1 + 8x_2 = 8$$
3. Indicate whether the statements are true or false.
   (a) If a linear system has more equations than unknowns, then the system cannot have a unique solution.
   (b) If a linear system has more unknowns than equations, then the system cannot have a unique solution.
4. For what values of A and B, if any, does the system have (a) an infinite number of solutions? (b) no solutions? (c) exactly one solution?
$$\begin{aligned} x_1 + 2x_2 &= 1 \\ Ax_1 + Bx_2 &= 2 \end{aligned}$$