Math 211, Spring 2017 — Homework 0

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Due January 27

Problem 1. Bookmark the class web page and read the syllabus there.

  `mtholyoke.edu/~tchumley/m211`

Problem 2. Take the following beginning of semester survey

  `https://goo.gl/forms/bkkcNDUbfmy7znsB3`

Problem 3. Read the guidelines for writing homework solutions

  `mtholyoke.edu/~tchumley/m211/guidelines.pdf`

Problem 4. SageMath (often referred to as just Sage) is a piece of mathematical software useful in various areas of mathematics, including linear algebra. Occasionally, it will be useful to use Sage to check answers, or in place of doing tedious computations by hand. Go to `cloud.sagemath.com` and make a free account **using your MHC email address**. This account will let you run Sage on the web, rather than installing on your local computer (which is also possible).

Problem 5. Work in Sage is done by typing commands into a worksheet and executing them in order, line by line, by pressing Shift-Enter on your keyboard. On the SageMath Cloud website, make a new project, and then create a new Sage worksheet. Try typing the following commands, hitting Shift-Enter after each one:

- `A = Matrix([[1,2,3],[3,2,1],[1,1,1]])`

- `A`

- `A.rref()`

I've posted a public worksheet of these commands and their output here:

  `https://goo.gl/SxHpOc`

Problem 6. On the first day of class, we discussed the system

$$x + 2y + 3z = 39$$
$$x + 3y + 2z = 34$$
$$3x + 2y + z = 26.$$

There is a matrix called the **augmented matrix** which corresponds to this system, given by

$$\begin{bmatrix} 1 & 2 & 3 & 39 \\ 1 & 3 & 2 & 34 \\ 3 & 2 & 1 & 26 \end{bmatrix}.$$

The first row above corresponds to the coefficients of x, y, z and the right hand side in the first equation $x + 2y + 3z = 39$. The second and third rows are formed similarly. Try inputting this matrix into Sage by running the command `B = Matrix([[1,2,3,39],[1,3,2,34],[3,2,1,26]])` followed by the command `B.rref()`. Compare with our computations from class.