Math 19620/20 Homework 1
Due date: Thursday, October 11, 2018

Please present your solutions clearly and in an organized way. Think of it this way: if you show it to another student in this class, he/she should be able to understand it without needing to ask you questions.

Wolfram Alpha

Wolfram Alpha is a very useful tool. Check it out if you have not used it before: http://wolframalpha.com. For example, try entering the following text into Wolfram Alpha:

```
reduced row echelon form of {{3,11,19,-2},{7,23,39,10},{-4,-3,-2,6}}
```

(or click here).

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Goal:

- Get some practice with Gauss-Jordan elimination and reduced row-echelon form.

Exercises 1.1:

- 1, 10, 11 (For these, use Gauss-Jordan elimination, like we discussed in class. Please show your calculations. You can use Wolfram Alpha to check your work.)

Exercises 1.2:

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From this point on, feel free to use Wolfram Alpha (or any other tool) to do Gauss-Jordan elimination for you.

Goals:

- Determine whether systems have no solution, one solution, or infinitely many solutions.
- Think about solving systems from the point of view of vectors.

Exercises 1.2:

- 5, 13, 15 (As part of your solution, you can use Wolfram Alpha to find the rref. Please write down the rref that Wolfram Alpha gives you.)

Exercises 1.3:

- 1, 2, 3, 4, 5, 6, 7 (For 5, "vector form" refers to the form we ended class with. See the top of page 33.)

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Goals:

- Get some practice with multiplying matrices and vectors.

Exercises 1.3:

- 14, 15, 17, 34, 36, 55 (For 55, see Definition 1.3.9. You may be able to solve this problem with just some trial and error, or you could solve the system like in Example 13.)