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# TEST 1 GUIDE

MA 103, Instructor: Jeffrey Horn, Winter 2017

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## Logistics

Our first topic test is on Thursday, March 2, 2017, in our usual classroom during our usual class time. Actually, I think that about one hour should be plenty of time so I plan to start the test at 5:30pm sharp. Do plan to be there at 5pm however (our usual class start time). I reserve that 30 minutes to introduce HW5 (due the week after break), perhaps return some graded items, and answer last minute questions about the exam, etc. There should be plenty of time to complete the test by our normal end-of-class time of 6:40pm but if anyone wants to stay a little longer I will be there until 7pm.

The exam is “open technology” which means you may use any tech you bring, including calculation, notebook computer, etc. as with our quizzes. It is also open book, open notes, etc. But of course you **MUST** do your own work. That means no online help from another human! You may use any “AI” (e.g., Wolfram Alpha, Siri, Cortana, etc.).

## Topics

The test covers all of the material in Chapter 1 of our textbook, at least as covered in homeworks 1-4 and quizzes 1, and 2 (i.e., all of our assessments to date!):

## Sample Questions

There will be a mix of question types, from simple “plug-and-chug” (mechanical) questions (e.g., “Rewrite the equation for the line  $15x - 9y = 18$  in general form (i.e., slope-intercept).”) to more conceptual questions (e.g., “If two lines have different slopes, how many unique points of intersection must they have?”).

1. Are the following three points collinear (i.e., all on the same line)?  $(-2, 6)$ ,  $(6, -2)$ ,  $(0, 0)$
2. Is the point  $(5,5)$  above, below, or on the line  $2x - 2y = 0$ ?
3. What is the slope of the line  $ax + by = c$  (where  $a, b, c$  are some constants)?
4. What is the y-intercept of the line above?
5. Which of the following inequalities exactly describes the shaded area in the graph below?  $x \leq 5y + 2$ , or  $x \geq 5y + 2$ , or  $y \leq 5x + 2$ , or  $y \geq 5x + 2$
6. Use linear regression (i.e., a best-fit line) to predict the cost of an iPhone 100.
7. Find the equation of the best-fit line for the following data points.  $(-22, 100)$ ,  $(-16, -56)$ ,  $(-5, 24)$ ,  $(0, -1)$
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