# Math 112A − Homework 1

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**Reading:** Sections 1.1 and 1.2. In Section 1.1, ignore everything on the last page (after Moral). Section 1.2 is a bit tricky; don't be too discouraged by it, the course will get better.

**Note:** I will assign roughly 10 problems per week. Hints/answers are in the back of the book. If you would like to see solutions to the problems, either ask me or the TA, or buy the solutions manual for the book.

**Update:** I have removed 13 from 1.2, but will put it on HW 2.

- **Section 1.1:** 2ab, 3gh (no need to provide reasons), 11, 12
- **Section 1.2:** 1, 2, 5, 8 (see hint below), 9

**Hint for 1.2.8:** Let

$$v(x, y) = u(x, y)e^{\frac{cx}{a}}$$

What PDE does $v$ solve? For this, calculate $u$ in terms of $v$ and calculate $u_x$, $u_y$

**Hint for 1.2.9:** Use Fact 2 in Lecture 2 (see the lecture notes), which says that all you need to do is to find the general solution of the homogeneous problem, and a particular solution of the original problem (which you can guess)