Math 190 Lab 1: Sept 15 and 17

Work through the following problems while the instructor and TA circulate. When you have completed the problems (to the satisfactory of the facilitators) you can spend the rest of the lab working on the weeks homework.

Warm up (factoring). Solve the following equations:

- $x^2 - 5x + 6 = 0$
- $3x^2 - x - 2 = 0$
- $x^2 - 9 = 0$
- $x^2 - 2x - 1 = 0$
- $x^2 - 5x + 12 = 0$

Questions:

1. The absolute value function is defined as

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}.$$

   (a) Plot $|x|$.
   (b) Plot $f(x) = |3x - 7|$.
   (c) Write f as a piecewise function.

2. Consider the function

$$g(x) = \frac{3x^2 - x - 2}{x - 1}.$$

   (a) What is the domain?
   (b) Sketch the graph of g.