

## Math 190 Lab 1: Sept 13 and 15

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

**Warm up (factoring).** Find all real values of  $x$  satisfying 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. Consider the function

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

- (a) What is the domain of function  $g$ ?
  - (b) Sketch the graph of  $g$ .
2. We can write the function  $\sqrt{x+1}$  as a composition of two functions. That is  $\sqrt{x+1} = f(g(x))$  where  $f(x) = \sqrt{x}$  and  $g(x) = x+1$ . Do the same for the following functions:
  - (a)  $\sin 4x$
  - (b)  $\cos^2 x$
  - (c)  $(\tan(x^2))^{1/2}$