

Assignment 1 for MA 113 - Calculus I (Spring 2010)

January 19, 2010

Instructions: The purpose of this and subsequent assignments is to develop your ability to formulate and communicate a mathematical argument showing step-by-step reasoning.

Please give a complete, well-written solution to each of the following problems. Your work will be graded for accuracy, completeness, and grammatically correct English.

Your solutions should be neat and legible, stapled, and your name should appear on each sheet. Moreover, on page 1 of your solution, please also indicate your *section number* to insure that you will receive proper credit for the assignment.

Due Date: Your completed solutions are due on **Wednesday, January 27, 2010**, at the beginning of lecture.

- (1) (5 Points) Consider the functions $f(x) = x + 5$ and $g(x) = 2\sqrt{x + 8}$.
- (a) Give the domain of the function g .
 - (b) Sketch the graphs of the functions f and g .
 - (c) Find the point(s) of intersection of the graphs of f and g .
- (2) (5 Points) Consider the function $f(x) = x^2 + 8x + 15$.
- (a) Determine the range of f .
 - (b) Find the largest number a such that f is one-to-one on the interval $(-\infty, a]$ and determine the inverse function g^{-1} of the function $g(x) = f(x)$ with domain $(-\infty, a]$.
 - (c) Find the smallest number b such that f is one-to-one on the interval $[b, \infty)$ and determine the inverse function h^{-1} of the function $h(x) = f(x)$ with domain $[b, \infty)$.