Math 3325 **Homework 2** **Spring 2013**

The assignment is due at the beginning of class on February 25, 2013.

Problem 1 (10 points) Show that the equation $x - 2 = \sqrt{x + 7}$ has exactly one real solution.

Problem 2 (10 points) Let x, y and z be natural numbers. Prove or disprove: If $x + y$ is even and $y + z$ is even, then $x + z$ is even.

Problem 3 (10 points) Let x, y and z be natural numbers. Prove or disprove: If $x + y$ is odd and $y + z$ is odd, then $x + z$ is odd.

Problem 4 (10 points) Let x be a natural number. Prove or disprove: If x^2 is divisible by 27, then x is divisible by 9.

Problem 5 (10 points) Show that $\sqrt{27}$ is an irrational number.