Homework 1

Due: 2014.12.14, in class

Problem 1   Diagonalization

Wirte out the proof that there exist functions mapping integer to integer that are not computable. Try to make your proof simple enough so a high school student can understand it.

Problem 2   Countability1

Can one list all sets of five integers? Note an integer can be arbitrarily large.

Problem 3   Countability2

Can one list all finite sets of integers?

Problem 4   Express the set $\{1011011110111111110...01^{2n}|n \geq 1\}$ in interweaving notation.