Dalhousie University Faculty of Computer Science
Design and Analysis of Algorithms I
Assignment 2 CSCI 3110 Due: 3 Oct 2012

(1) (5 pts) Ex. 1.4, 1.31

(2) (4 pts.) Ex. 1.8

(3) (5 pts) Ex. 1.14, 1.19. (*For 1.14 assume that multiplying n-bit numbers costs $M(n)$ like in problem 0.4.*)

(4) (4 pts) Ex 1.22, Ex. 1.24

(5) (4 pts) Ex 1.27

(6) (a) (8 pts) Write an algorithm to compute the gcd in the least number of steps that at each step makes a "greedy" choice for the remainder (for example $\gcd(21, 13)$, has the choice $21 = (1) \cdot 13 + 8$ or $21 = (2) \cdot 13 - 5$.. The "greedy" choice is the one that leaves a remainder closer to zero).

(b) Prove your algorithm correct

(c) Compute the time complexity of the algorithm.