Exercise Sheet 5 (20 points)

Submission: Monday, 02.12.2013, 23:00

Exericise 1   Local Search
(8 Points)

a) Observe function f(x) in the Figure. Explain briefly how they work and give the solution of the methods:

- Hill-Climbing
- Stochastic Hill-Climbing
- Simulated-Annealing
- Beam Search

if the starting point for Hill-Climbing, Stochastic Hill-Climbing und Simulated-Annealing is $x = 1$, $x = 4$ oder $x = 5$. And if for Beam Search $k = 3$ and k starting points are $x = 2$, $x = 4$ and $x = 6$. Motivate your solutions.
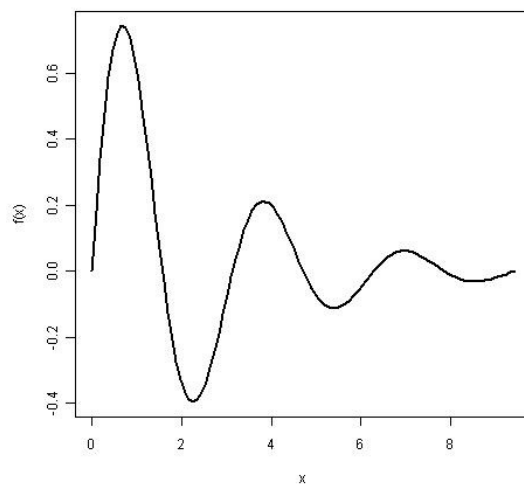
(8 Points)

Exercise 2   Constraint Satisfaction Problems
(12 Points)

a) Describe how the Backtracking works and how the algorithm can be used on the shown Sudoku. Show all steps until the first backtrack is necessary.

		3		2		6		
9			3		5			1
		1	8		6	4		
		8	1		2	9		
7								8
		6	7		8	2		
		2	6		9	5		
8			2		3			9
		5		1		3		

Show the related search tree that has at least three steps giving concrete values. (7 Points)

b) Do the same using the Forward Checking algorithm until the first constraint domain is empty. Also in this case use a table like the one in the slides to show your steps. (7 Points)