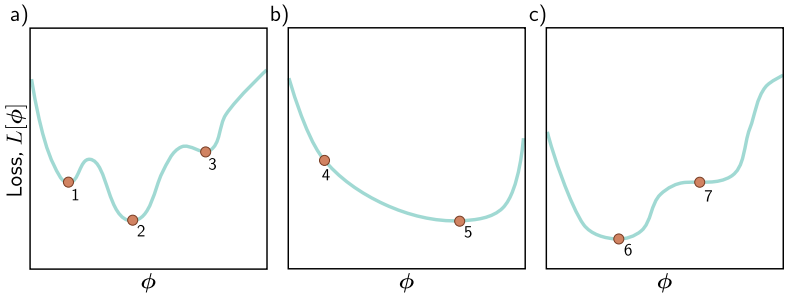
Local Search Review

Artificial Intelligence



1. Which of the functions above is/are convex?

2. Which of the points above is/are a local minimum?

3. Which of the points above is/are a global minimum?

4. Write the basic hill-climbing algorithm.

5. What is the main weakness of hill-climbing algorithms?

6. How can the basic hill-climbing algorithm be modified to overcome its weaknesses?

7. How does simulated annealing avoid getting stuck in local minima?

8. What is (stochastic) beam search?

9. What does the mixing number parameter, ρ, in the basic algorithm control?

10. What do you have when you set $\rho = 1$ in the basic genetic algorithm?

11. In gradient descent algorithms, what happens if you set the step size/learning rate parameter too high?

12. Define belief state.

13. What form does the solution (sequence of actions that leads to a goal state) to an environment with nondeterministic actions take?

14. Is it possible to find a solution to a problem in a sensorless environment?

15. Describe the three-step state estimation procedure used by agents in partially observable environments.