

## Hill Climbing:

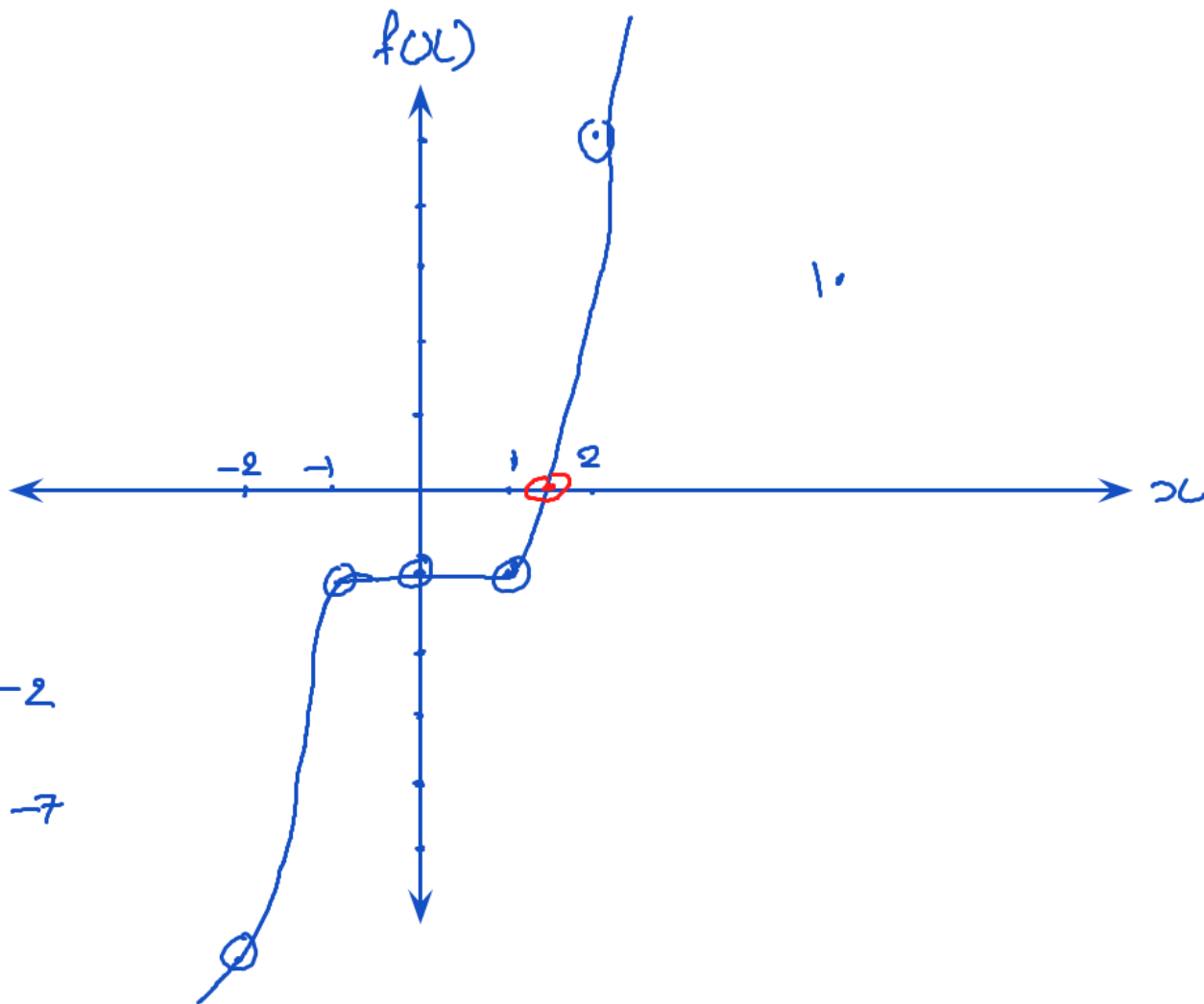
$$f(x) = x^3 - x - 1 = 0$$

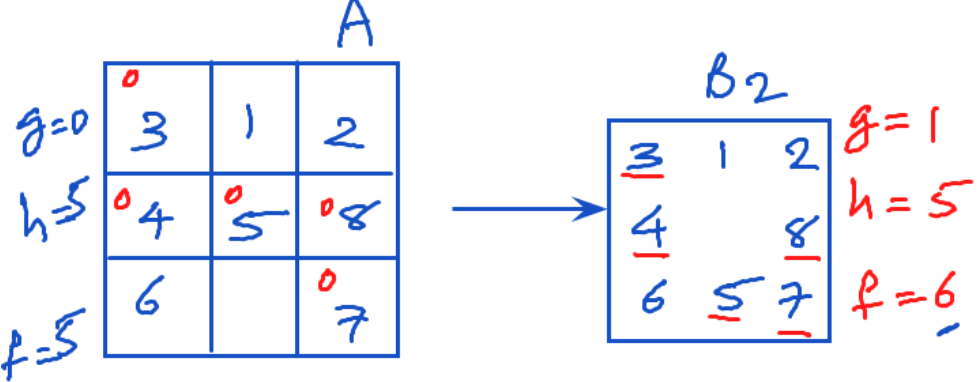
$$ax^2 + bx + c = 0$$

$$\text{roots} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

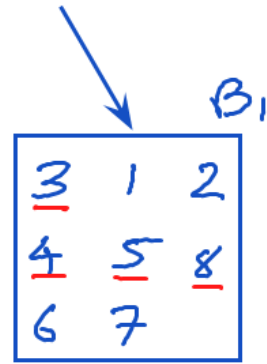
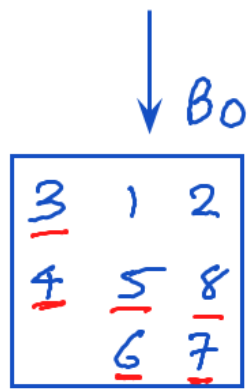
$x$	0	1	2	3	-1	-2
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$f(x)$	-1	-1	5	23	-1	-7
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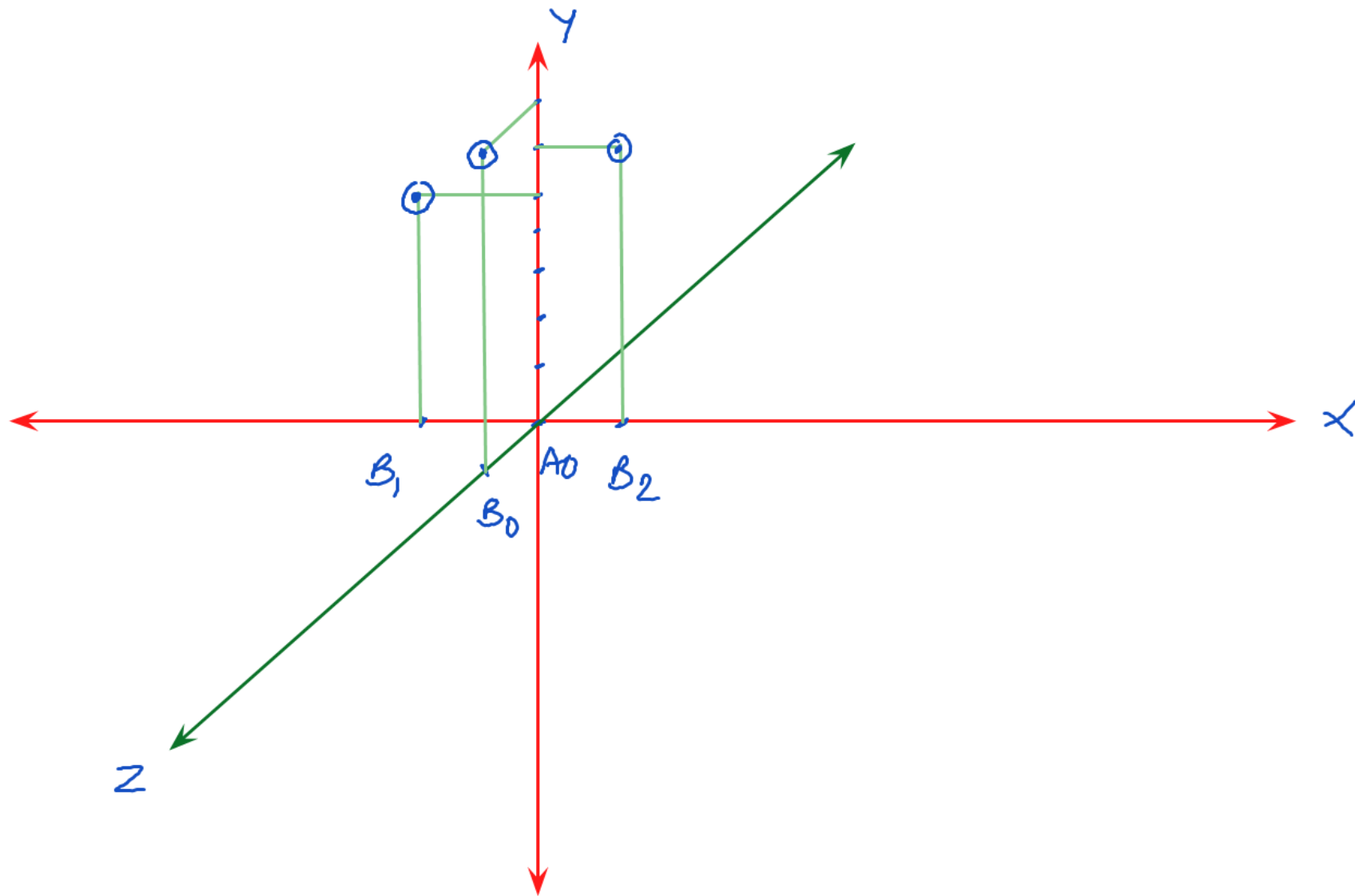


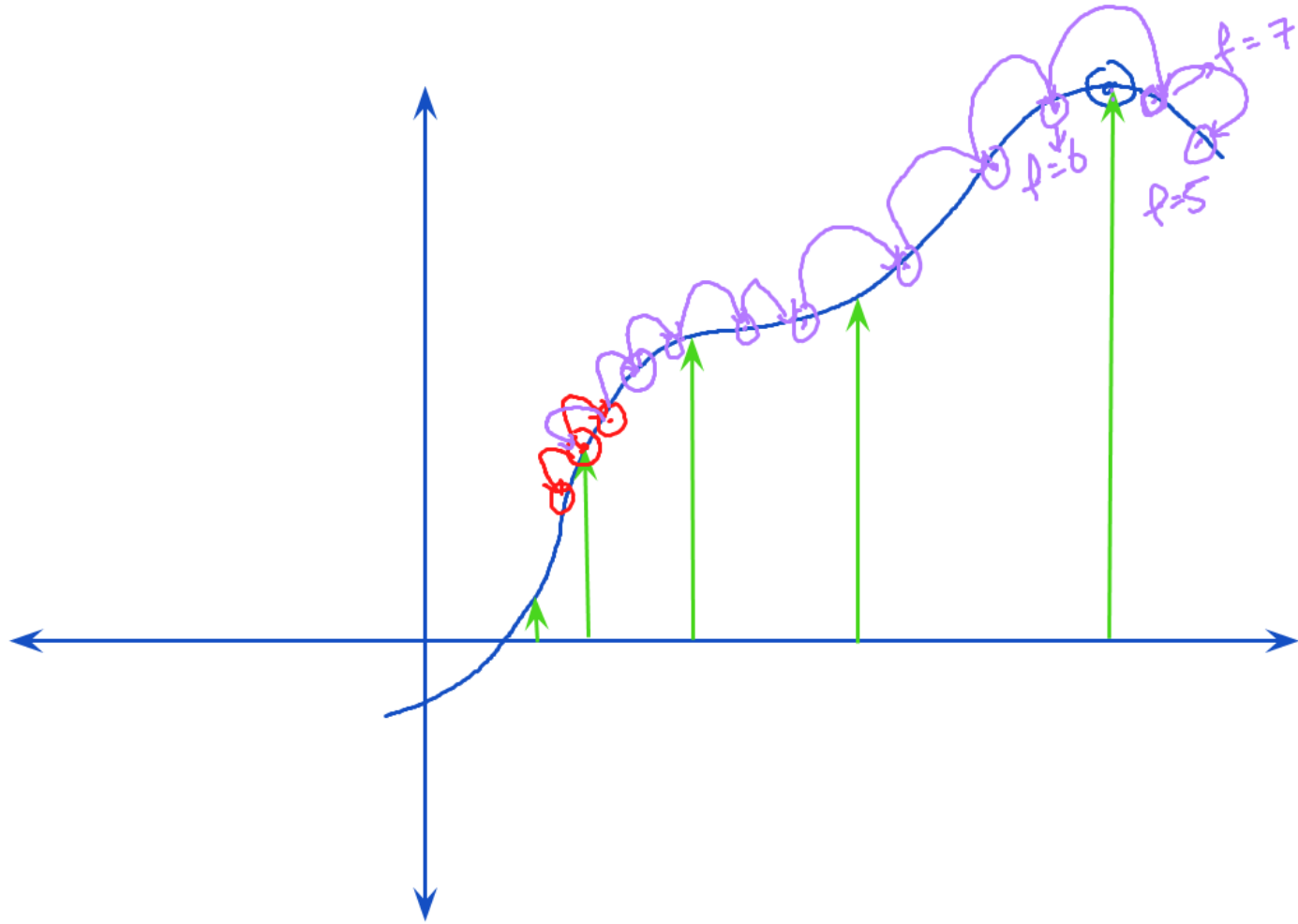
	1	2
3	4	5
6	7	8



Labels for Matrix B0:  $g=1$ ,  $h=6$ ,  $f=7$ .

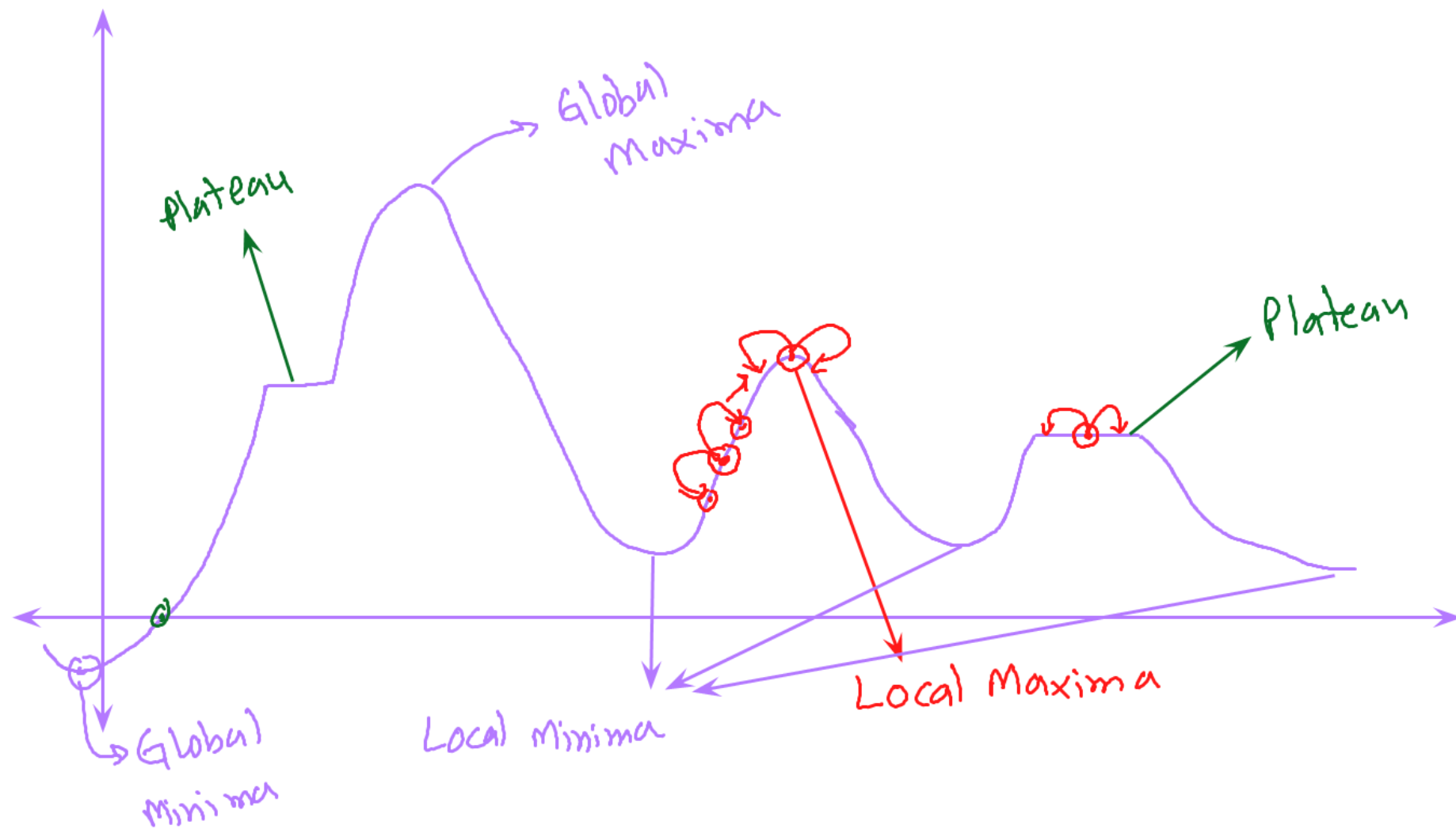
Labels for Matrix B1:  $g=1$ ,  $h=4$ ,  $f=5$ .





(i) Distance from the goal state.  
lessen is better.  
0 is ideal.

(ii) Height as  
Heuristic values  
greater is better



Simple hill climbing: Selects the first neighbor that is better than the current state. Does not evaluate all the neighbors.

Steepest Ascent Hill Climbing: Evaluates all the neighbors first and then, chooses the best state amongst them all.

Properties:

1. Terminates when a peak is reached.
2. Does not look ahead than one neighbor.
3. If more than one neighbors are having same height, it will choose one of them randomly.
4. It does not backtrack hence requires very less memory