Question 2.

(a) $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

Step 1 :

. Triple $\{1, 5, 9\}$ → pivot = 5

. Partition : $L = [1, 2, 3, 4]$ | $E = [5]$ | $G = [6, 7, 8, 9]$

. Recursion : QuickSort(L) and QuickSort(G)

Sub-tree $L = [1, 2, 3, 4]$

. Triple $\{1, 2, 4\}$ → pivot = 2

. Partition :

$L = [1]$ | $E = [2]$ | $G = [3, 4]$

↓

left side solved, recurse in $G([3, 4])$

- $G([3, 4])$: triple $\{3, 3, 4\}$ → pivot = 3

[ ] | [3] | $G = [4]$ → done

Subtree $G = [6, 7, 8, 9]$:

. Triple $\{6, 7, 9\}$ → pivot = 7

. Partition :

[6] | [7] | $G = [8, 9]$

↓

recurse in $G([8, 9])$

. Triple $\{8, 8, 9\}$ → pivot = 8

. Partition : [ ] | [8] | [9]

Result : [1, 2, 3, 4, 5, 6, 7, 8, 9]

Question 2

(b) $A = \{8, 7, 6, 5, 4, 3, 2, 1, 9\}$

- Triple $\{4, 8, 9\}$ pivot = 8

- Partition :

$L = [7, 6, 5, 4, 3, 2, 1] \mid E = [8] \mid G = [9]$

- Recursion : QuickSort L ($[7, 6, 5, 4, 3, 2, 1]$)

- Triple $\{1, 4, 7\}$ → pivot = 4

$[3, 2, 1] \mid [4] \mid [7, 6, 5]$

Triple $\{1, 2, 3\}$ pivot = 2

$[1]$ $[2]$ $[3]$

Triple pivot = 6

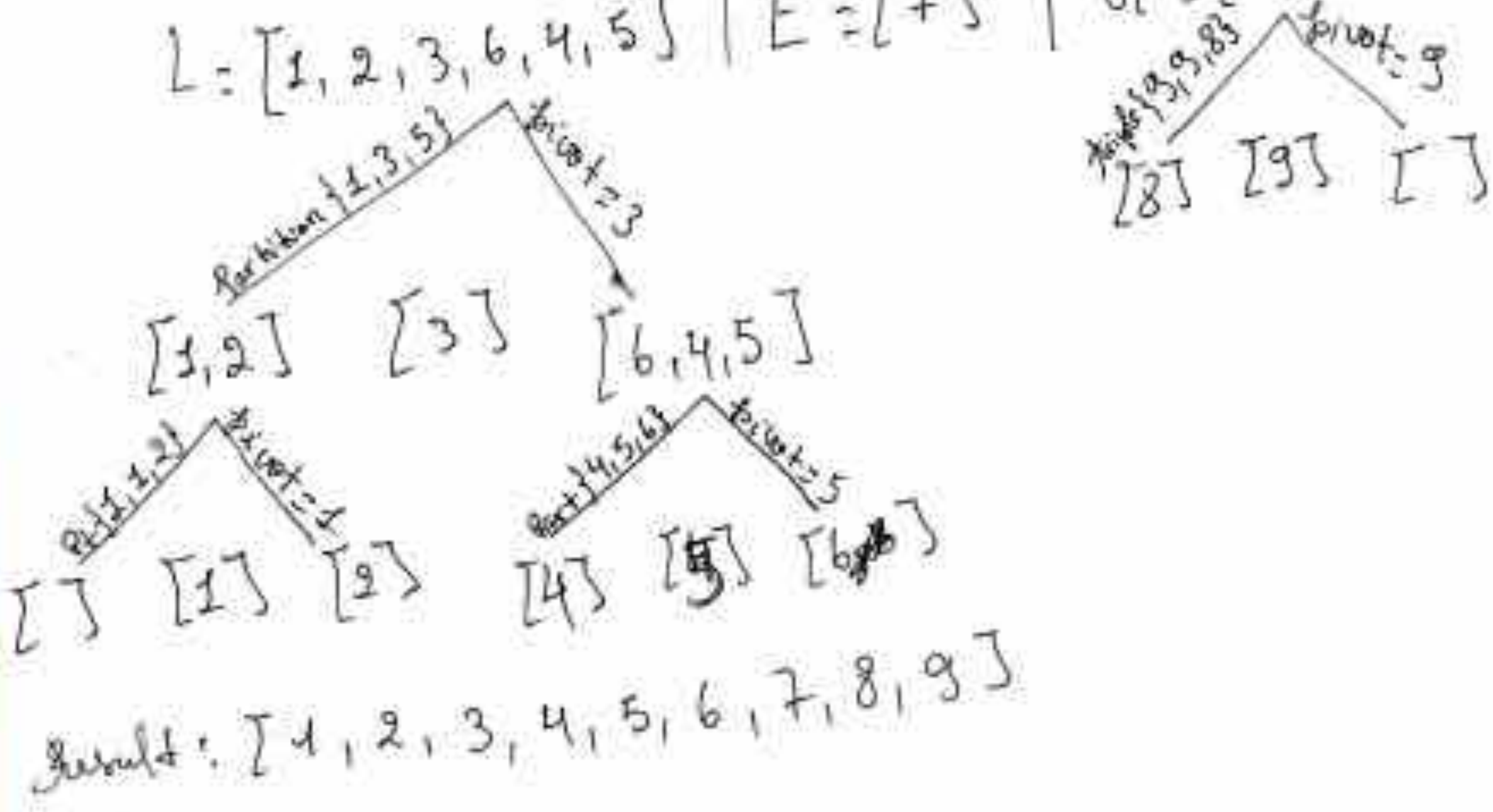
$[5]$ $[6]$ $[7]$

Result : $[1, 2, 3, 4, 5, 6, 7, 8, 9]$

Question 2

(c) A = {9, 1, 8, 2, 7, 3, 6, 4, 5}

triple {5, 7, 9} → pivot = 7



Result: [1, 2, 3, 4, 5, 6, 7, 8, 9]