DSA Class 1

Resources:

https://www.geeksforgeeks.org/learn-data-structures-and-algorithms-dsa-tutorial/?ref=shm&fbclid=IwAR3lJdB0x59iUfqEuDADrAlFs8_T3VidQwx3NnWjRKZPgFW-ekaGEo0cbVA

https://www.geeksforgeeks.org/introduction-to-arrays-data-structure-and-algorithm-tutorials/?fbclid=IwAR0p316YRdIqC9gklL2fwMT5VVyuDUT-Kk19_DrYMZX6669h-er3-Kc28Z4

Problems:

https://leetcode.com/problems/running-sum-of-1d-array/

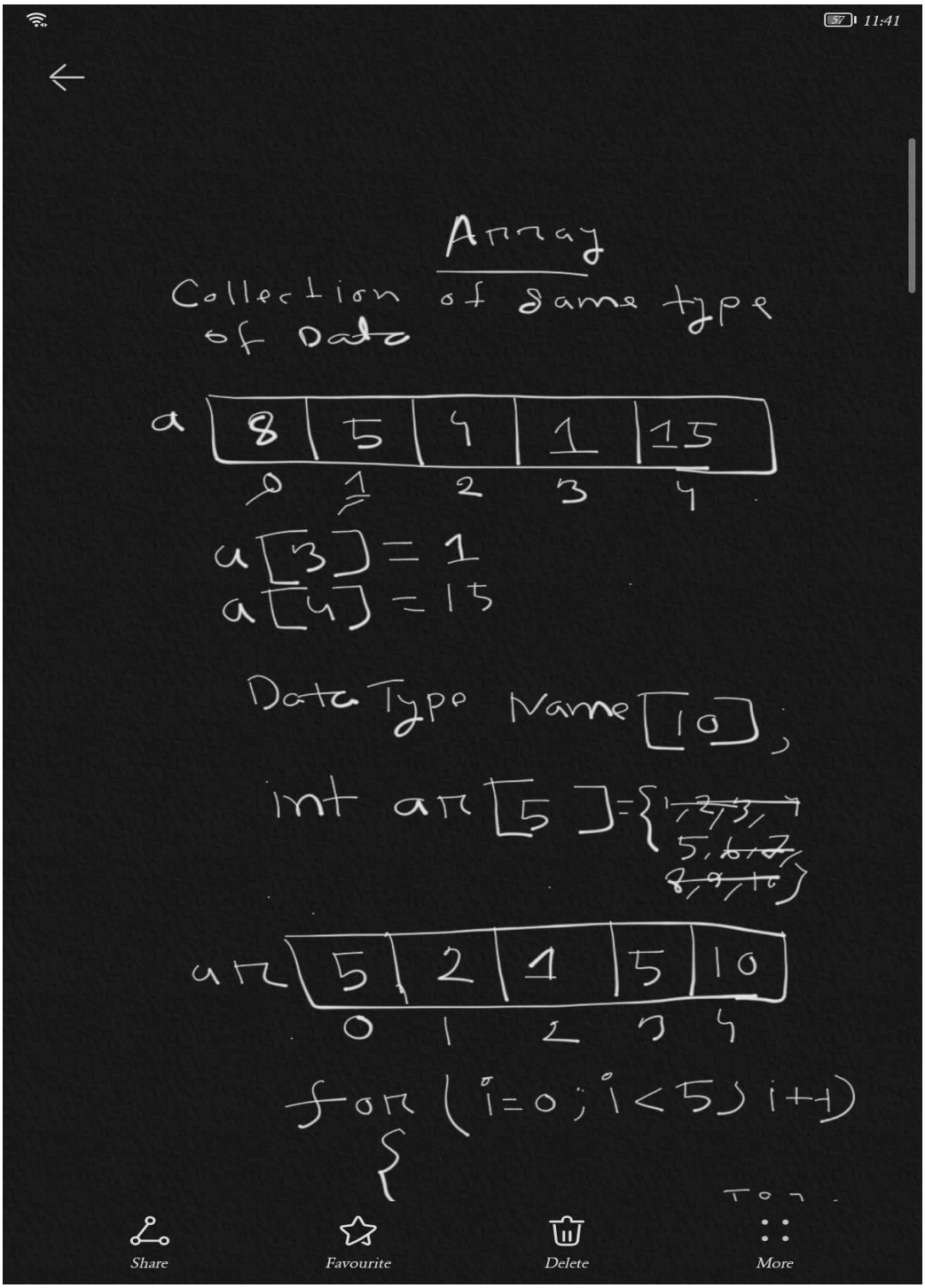
https://leetcode.com/problems/find-pivot-index/

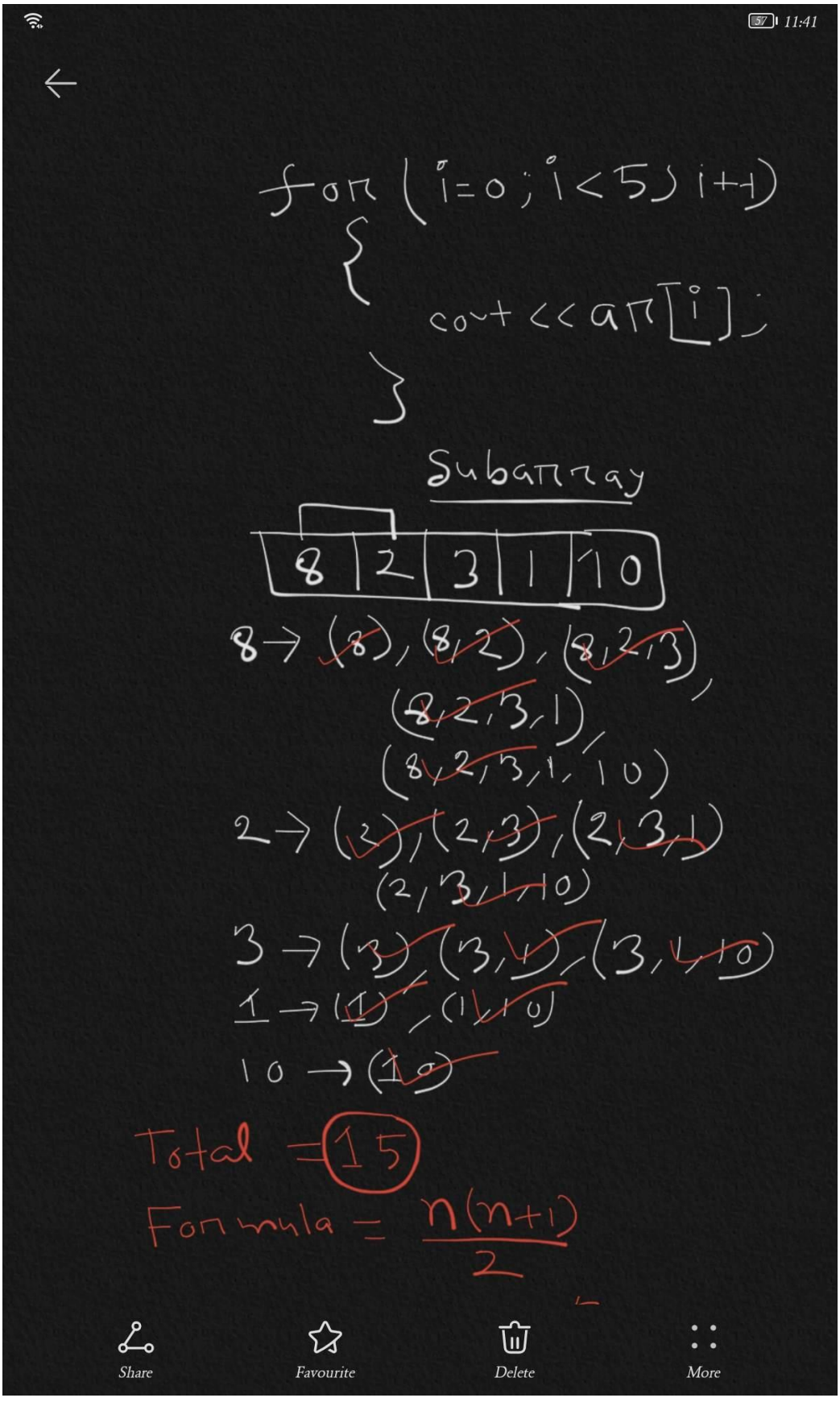
https://leetcode.com/problems/sum-of-all-odd-length-subarrays/

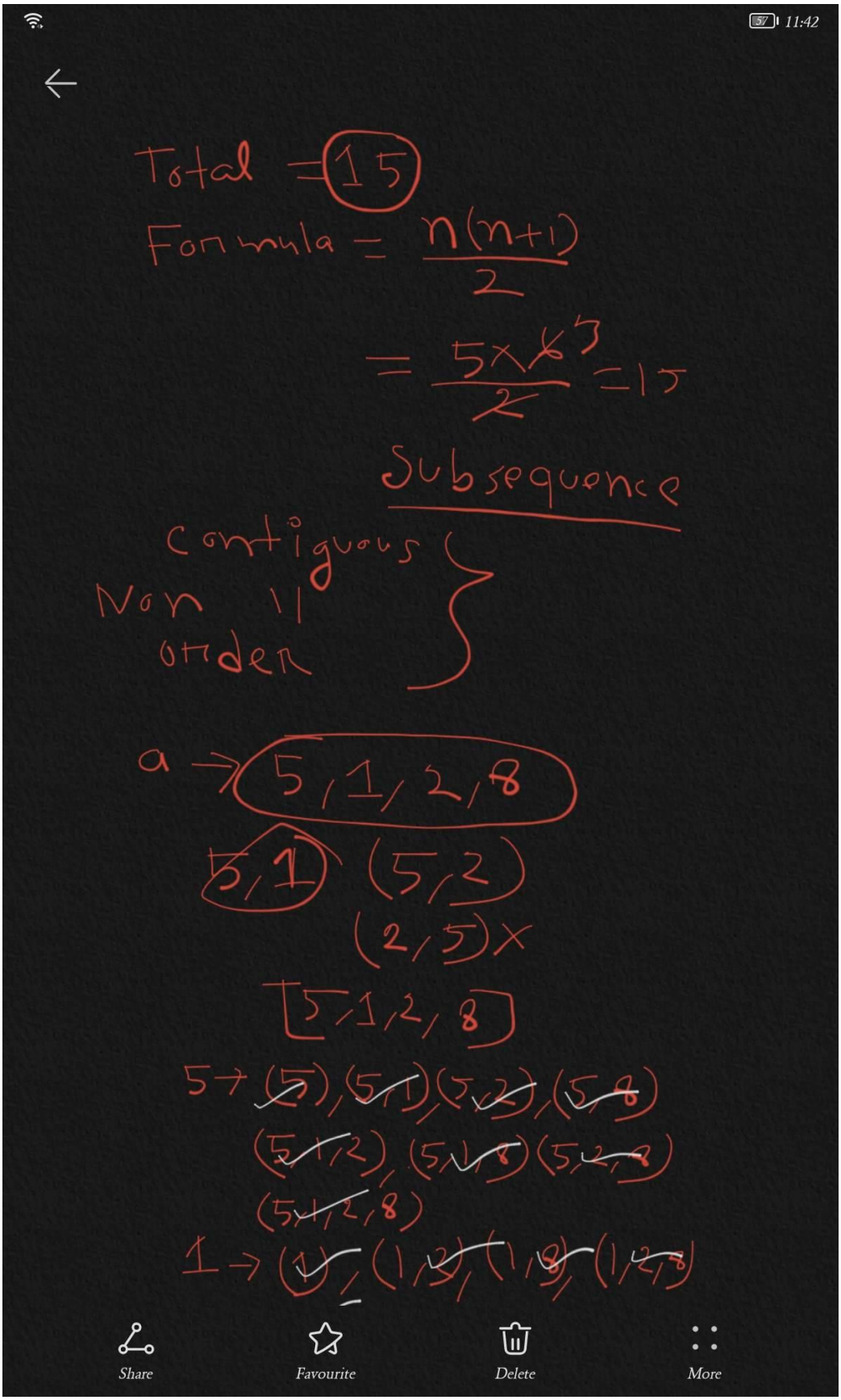
https://leetcode.com/problems/left-and-right-sum-differences/

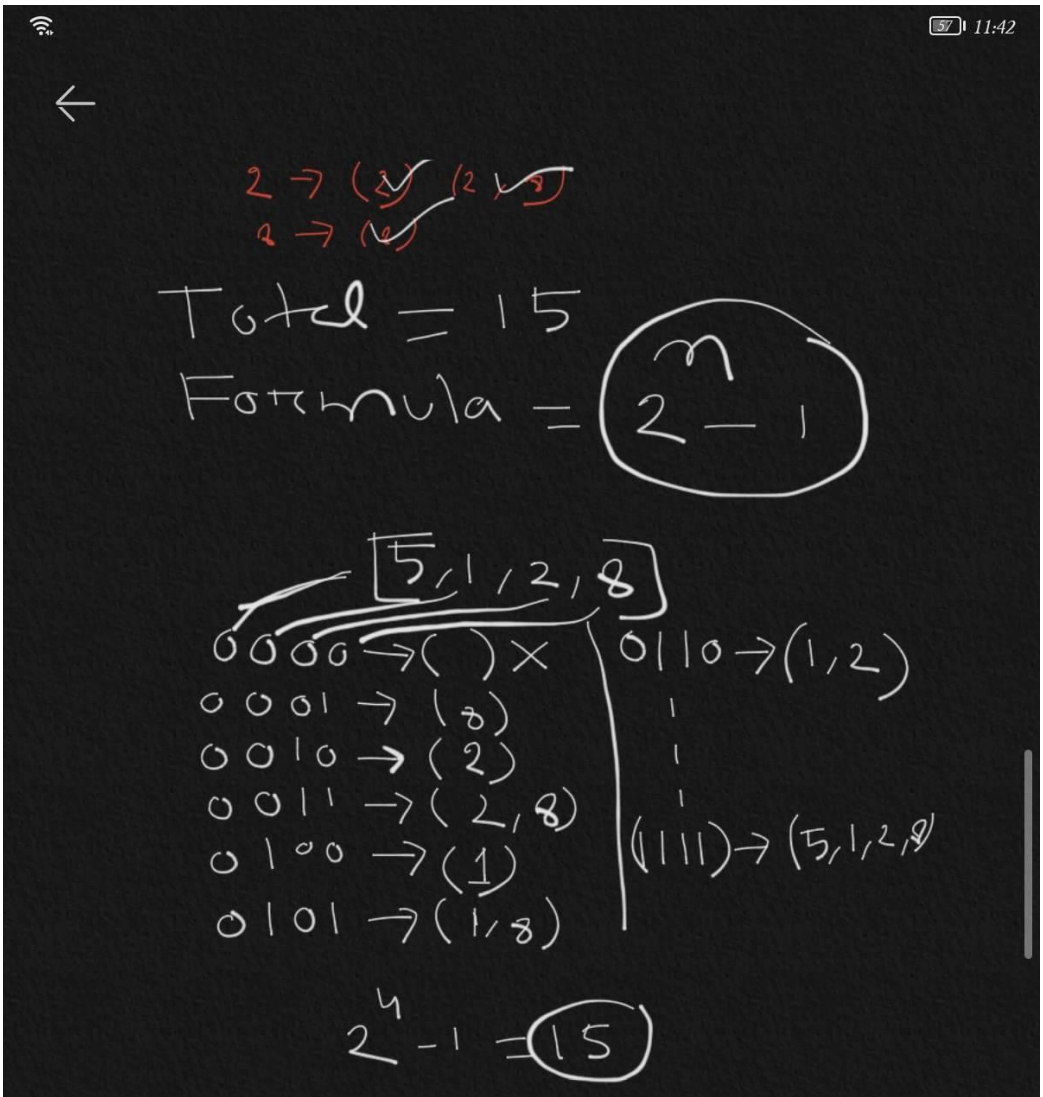
https://leetcode.com/problems/subarray-sum-equals-k/

Explanations


11:41
Array
Collection of same type of Data
a
8
5
4
1
15
0
1
2
3
4
a[3] = 1
a[4] = 15
Data Type Name [10];
int arr[5] = {1,2,3,4,5,6,7,8,9,10};
arr
5
2
1
5
10
0
1
2
3
4
for(i=0; i<5; i++)
{
Share
Favourite
Delete
More

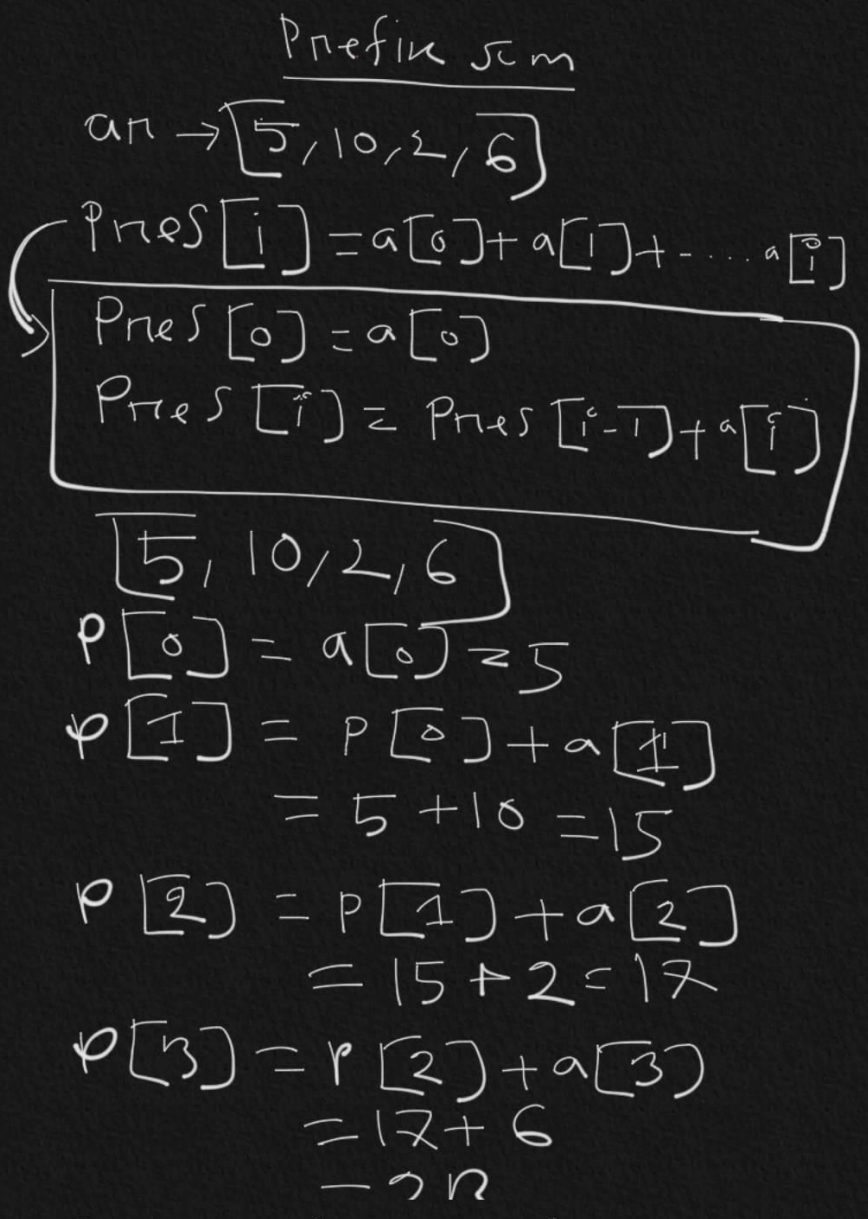

11:41
for(i=0;i<5;i++)
{
cout<<ar[i];
}
Subarray
8 2 3 1 10
8→ (8), (8,2), (8,2,3),
(8,2,3,1),
(8,2,3,1,10)
2→ (2), (2,3), (2,3,1)
(2,3,1,10)
3→ (3), (3,1), (3,1,10)
1→ (1), (1,10)
10→ (10)
Total = 15
Formula = n(n+1)/2
Share
Favourite
Delete
More

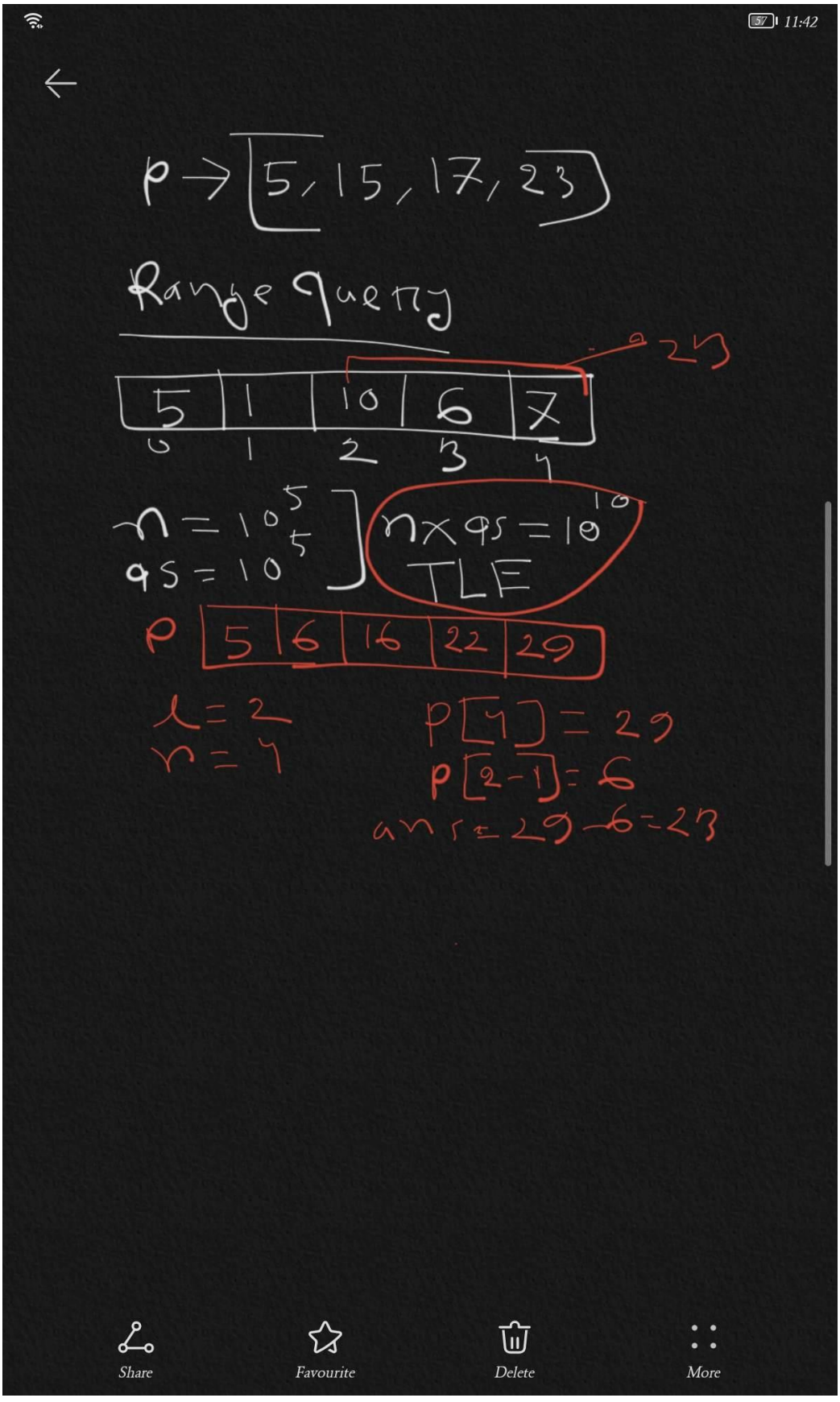

11:42
Total = 15
Formula = n(n+1)/2
= 5×6/2 = 15
Subsequence
Contiguous
Non
order
a → 5, 1, 2, 8
(5,1)
(5,2)
(2,5)X
[5,1,2,8]
5→ (5), (5,1), (5,2), (5,8)
(5,1,2), (5,1,8) (5,2,8)
(5,1,2,8)
1→ (1), (1,2), (1,8), (1,2,8)
Share
Favourite
Delete
More


Total = 15
Formula = $2^n - 1$
5, 1, 2, 8
0000 → ( ) ×
0001 → (8)
0010 → (2)
0011 → (2, 8)
0100 → (1)
0101 → (1, 8)
0110 → (1, 2)
(1111) → (5, 1, 2, 8)
$2^4 - 1 = 15$

Prefix Sum

Today 9:04 PM No category




11:42
p → [5, 15, 17, 23]
Range query
5 1 10 6 7
0 1 2 3 4
23
n = 10^5
qs = 10^5
n x qs = 10^10
TLE
p 5 6 16 22 29
l = 2
r = 4
p[4] = 29
p[2-1] = 6
ans = 29 - 6 = 23
Share
Favourite
Delete
More