

9. Find Position of an Element in a Sorted Array of Infinite numbers.

0	1	2	3	4	5	6	7	8	9	10	...	∞
3	5	8	10	11	14	15	90	100	130	142	...	

, target = 130

↑ ↑
 l r target > a[r] $r = 2 * r$

0	1	2	3	4	5	6	7	8	9	10	...	∞
3	5	8	10	11	14	15	90	100	130	142	...	

↑ ↑
 l r target > a[r] $r = 2 * r$

0	1	2	3	4	5	6	7	8	9	10	...	∞
3	5	8	10	11	14	15	90	100	130	142	...	

↑ ↑
 l r 130 > 11

0	1	2	3	4	5	6	7	8	9	10	...	∞
3	5	8	10	11	14	15	90	100	130	142	...	

↑ ↑
 l r 130 > 100

0	1	2	3	4	5	6	7	8	9	10	...	16	∞
3	5	8	10	11	14	15	90	100	130	142	...	180	

↑ ↑
 l r

target < a[r] → search in [l, r]

Key point:

- In each iteration, double the r
- check target & a[r]