

Binary Search

array $\rightarrow [20, -30, 10, 5, 7, 0, 29, \infty, \infty, \infty, \infty, \dots]$
0 1 2 3 4 5 6 7 8 9 10 \downarrow
n-element ∞ $n-1$

Problem \rightarrow Position of first infinite element

output $\rightarrow 7$

Linear Search \rightarrow for loop
if $arr[i] == 'inf'$
 \rightarrow return i

\Rightarrow $O(n)$

Binary Search $\rightarrow mid = i + (j - i) // 2$

if $arr[mid] != 'inf'$

\rightarrow Right side of the mid

if $arr[mid] == 'inf'$

previous index element $\rightarrow != 'inf'$

\rightarrow return mid

otherwise

\rightarrow Left side of the
mid

Note \rightarrow Array (logically apply binary search)
 \downarrow
(left side & right side movement)