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1 R14.3

A. $O(n^2)$

B. $O(n^{10})$

C. $O(n^4)$

D. $O(n^4)$

E. $O(n^3)$

F. $O(n^3)$

G. $O(n)$

H. $O(n^2)$

I. $O(2^n)$

J. $O(n^6)$

2 R14.9

The big-Oh time estimate is $O(n)$. this is because the loop will run about .5*n where n is the length of the array.

3 R14.12

- 4,7,11,4,9,5,11,7,3,5
  - 4,7,11,4,9,5,11,7,3,5
    ...
  - 3,7,11,4,9,5,11,7,4,5
- 3,7,11,4,9,5,11,7,4,5
  - 3,7,11,4,9,5,11,7,4,5
    ...
  - 3,4,11,7,9,5,11,7,4,5
- 3,4,11,7,9,5,11,7,4,5
  - 3,4,11,7,9,5,11,7,4,5

  - 3,4,7,11,9,5,11,7,4,5
    ...
  - 3,4,5,11,9,7,11,7,4,5
  - 3,4,4,11,9,7,11,7,5,5
- 3,4,4,11,9,7,11,7,5,5
  - 3,4,4,11,9,7,11,7,5,5
    ...
  - 3,4,4,5,9,7,11,7,11,5
- 3,4,4,5,9,7,11,7,11,5
  - 3,4,4,5,9,7,11,7,11,5
    ...
  - 3,4,4,5,5,7,11,7,11,9
- 3,4,4,5,5,7,11,7,11,9
  - 3,4,4,5,5,7,11,7,11,9
    ...
  - 3,4,4,5,5,7,7,11,11,9
- 3,4,4,5,5,7,7,11,11,9
  - 3,4,4,5,5,7,7,9,11,11

4 R14.13

- 5,11,7,3,5,4,7,11,4,9
  - 5,11,7,3,5 4,7,11,4,9
    - 5,11 7,3,5 4,7 11,4,9
      - 5,11 7 3,5 4,7 11 4,9
    - 5,11 3,5,7 4,7 4,9,11
  - 3,5,5,7,11 4,4,7,9,11
- 3,4,4,5,5,7,7,9,11,11

5 R14.14

A. Linear Search

- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13

B. Binary Search

- -7, 1, 3, 3 4, 7, 8, 11, 13
- -7, 1, 3, 3, 4, 7, 8 11, 13
- -7, 1, 3, 3, 4, 7, 8 11, 13
- -7, 1, 3, 3, 4, 7, 8 11, 13

C.

- -7, 1, 3, 3 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13
- -7, 1, 3, 3, 4, 7, 11, 13

6 R14.16