Worst case complexity for Deterministic QuickSort occurs when the pivot is the largest or smallest element. array given is already in order OR in reverse order.

[1,2,3,4,5] as an example.
Then the partition would look like
[1,2,3,4] and [5]
This pattern will repeat for each element til the first one.

It works like a sum of n. (n + (n-1) + (n-2)...... + 2) which ends in an array of 2 elements. This can be rewritten with the sum of integers formula given in class. (n(n-1))/2, then placed into what we have so far.
(n(n+1) / 2) - 1

3. Each iteration places all values lower than the pivot to the left array.

```
array1 = [16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1]


#Firstly the pivot will be chosen as 16.



#Then two sub arrays will be made, one being completely empty and the
other containing all other elements
# [15, 14, 13, 12 ,11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1], [16]
#then the next pivot will be made as the next element
#This will repeat until the last two elements
#[14, 13, 12 ,11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1], [15], [16]
#[13, 12 ,11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1], [14], [15], [16]
#[12 ,11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1], [13], [14], [15], [16]
#[11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1], [12], [13], [14], [15], [16]
#[10, 9, 8, 7, 6, 5, 4, 3, 2, 1], [11], [12], [13], [14], [15], [16]
#[9, 8, 7, 6, 5, 4, 3, 2, 1], [10], [11], [12], [13], [14], [15], [16]
#[8, 7, 6, 5, 4, 3, 2, 1], [9], [10], [11], [12], [13], [14], [15],
[16]
#[7, 6, 5, 4, 3, 2, 1], [8], [9], [10], [11], [12], [13], [14], [15],
[16]
#[6, 5, 4, 3, 2, 1], [7], [8], [9], [10], [11], [12], [13], [14], [15],
[16]
```

```
#[5, 4, 3, 2, 1], [6], [7], [8], [9], [10], [11], [12], [13], [14],
[15], [16]
#[4, 3, 2, 1], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14],
[15], [16]
#[3, 2, 1], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14],
[15], [16]
#[2, 1], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13],
[14], [15], [16]
#[1, 2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13],
[14], [15], [16]
#[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 ,13, 14, 15, 16]
```

4.

Yes, my graph showed a quadratic result. As the array size increased so did the comparisons quadratically.