Big O notation questions

Step One: Simplifying Expressions

Simplify the following big O expressions as much as possible:

1. O(n + 10) = O(n)
2. O(100 \* n)= O(n)
3. O(25) = O(1)
4. O(n^2 + n^3) = O(n^2) + O(n^3)
5. O(n + n + n + n) = O(4n) = O(n)
6. O(1000 \* log(n) + n) = O(n)
7. O(1000 \* n \* log(n) + n) = O(n \* logn)
8. O(2^n + n^2) = O(n^2)
9. O(5 + 3 + 1) = O(1)
10. O(n + n^(1/2) + n^2 + n \* log(n)^10) = O(nlogn)

**Step Two: Calculating Time Complexity**

Determine the time complexities for each of the following functions. If you’re not sure what these functions do, copy and paste them into the console and experiment with different inputs!

1. O(n)
2. O(n)
3. O(1)
4. O(n)
5. O(n^2)
6. O(n)

**Part 3 - short answer**

Answer the following questions

1. True or false: n^2 + n is O(n^2). True
2. True or false: n^2 \* n is O(n^3). True
3. True or false: n^2 + n is O(n). False
4. What’s the time complexity of the .indexOf array method? O(n), depends on amount in index
5. What’s the time complexity of the .includes array method? O(n), depends on amount.
6. What’s the time complexity of the .forEach array method? O(n), depends on amount.
7. What’s the time complexity of the .sort array method? O(n log n)
8. What’s the time complexity of the .unshift array method? O(1) adds specified amount to beginning
9. What’s the time complexity of the .push array method? O(1) adds specified amount to end.
10. What’s the time complexity of the .splice array method? O(1), adds or removes specified items
11. What’s the time complexity of the .pop array method? O(1) takes last item in array
12. What’s the time complexity of the Object.keys() function? O(n)