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PART 1

1. $2n^3-7n^2+100n-36$ is in $O(n^3)$

Answer : True

Proof : $2n^3-7n^2+100n-36 <= (2 + 0 + 100 + 0)n^3 = 102n^3 = cn^3$

For c = 102, when $n >= n_0 = 1$

2. $10n+3\log(n)$ is in $O(n)$

Answer : True

Proof : $10n+3\log(n) <= (10 + 3)n = 13n = cn$

For c = 13, when $n >= n_0 = 1$

3. $n/1000$ is in $O(1)$

Answer : False

Proof : There does not exist a combination of numbers c and n_0, where $n/1000 <= 1c$

4. $\log(n)^2+ \log(n)/30$ is in $O(\log(n)^2)$

Answer : True

Proof : $\log(n)^2 + \log(n)/30 <= (1 + 1/30)\log(n)^2 = 31/30\log(n)^2 = c\log(n)^2$

For $c = 31/30$, when $n >= n_0 = 1$

5. $n^2/\log(n)+3n$ is in $O(n^2)$

Answer : False

Proof : n^2 is not the "tightest" big oh bound. The "tightest" big oh bound is : $n^2/\log(n)$

6. 36n

Answer : O(n)

7. $n^2/2+15n$

Answer : $O(n^2)$

8. $(n^2/4)(8/n)$

Answer : O(n)

9. n+10log(n)

Answer : O(n)

10. 87262

Answer : O(1)

Method 1 : m1FindLargest (**int** [ ] array)

Answer : O(array.length)

Method 2 : m2PrintTriangle (**int** size)

Answer : O(size)

Method 3 : m3PrintBooks (String books[], **int** [ ] stars)

Answer : O(books.length)

PART 2