

# Quiz 2

True and False questions: Answer True or False to each question below. Answer true only if it is true as stated with no additional assumptions. Adding a short explanation will give you partial credit even if your answer is wrong. All questions have equal points. Other questions give on line answer.

\* Required

1. First provide your Name and ID \*

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2. Given  $N! = 1 \cdot 2 \cdot 3 \cdot \dots \cdot N$  Take  $\log T(N) = \log(N!)$  and prove  $T(N)$  in  $O(N \log N)$  \*

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3. True/False:  $\sum_{i=1}^N i^k$  in  $O(N^k)$

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4. True/False: Given  $T(N) = 2 T(N/2) + 1/N$  implies  $T(N) = O(N)$

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5. True/False:  $\sum_{i=1}^N N/i$  in  $O(N)$

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6. True/False: Given an array of positive  $N$  integers  $a[k]$  with  $k = 1, 2, \dots, N$  Sorting  $a[k]$  in ascending order maximizes  $\sum_k (k a[k])$

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