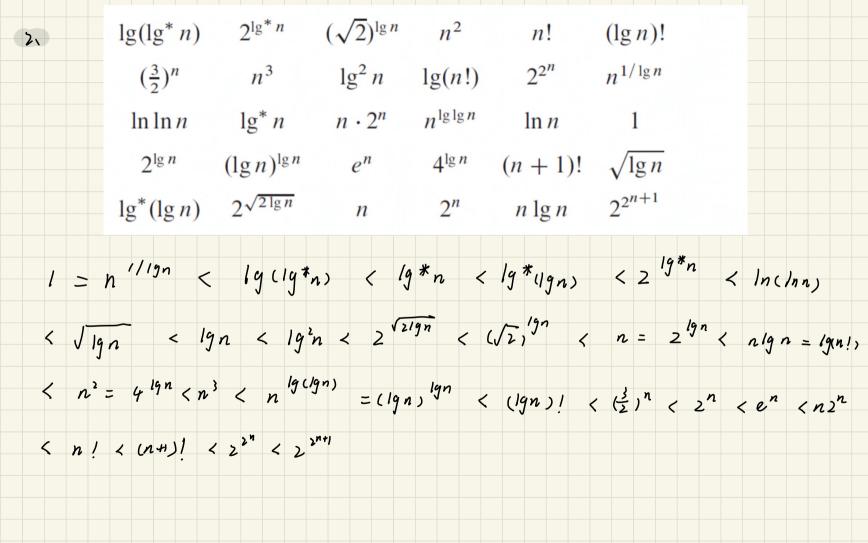
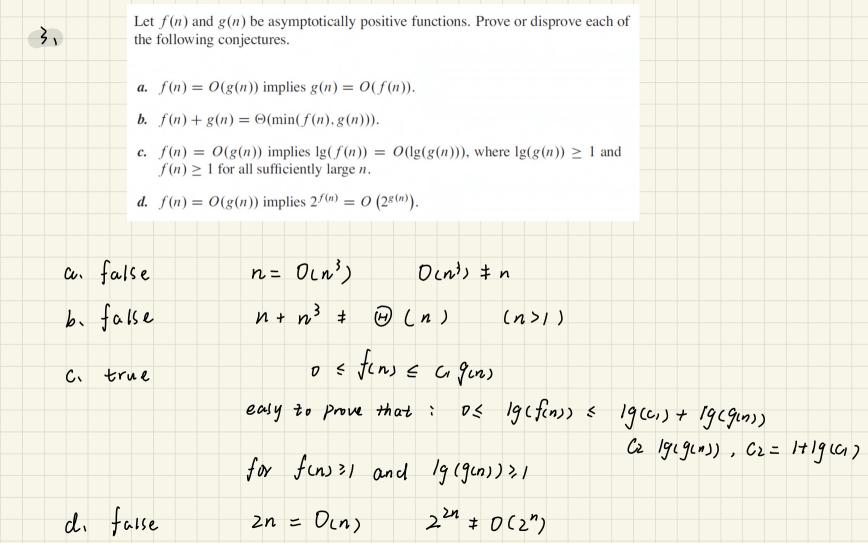
Indicate, for each pair of expressions (A, B) in the table below, whether A is O, o, $\Omega, \omega, \text{ or } \Theta \text{ of } B$. Assume that $k \geq 1, \epsilon > 0$, and c > 1 are constants. Your answer should be in the form of the table with "yes" or "no" written in each box. ω (H) B \boldsymbol{A} n^{ϵ} Yes yes no no no Yes yes NO no n D $n^{\sin n}$ \sqrt{n} no no 10 NO 10 $2^{n/2}$ d. Yes yes No No ИO $n^{\lg c}$ $c^{\lg n}$ yes Yes yes No No $\lg(n^n)$ $\lg(n!)$ YUS YUS yes No No

h





1-4 Consider sorting *n* numbers stored in array A by first finding the largest element of A and exchanging it 4. with the element in A[n]. Then find the second largest element of A, and exchange it with A[n-1]. Continue in this manner for all *n* elements of A. Write pseudocode for this algorithm, and answer the following questions: What loop invariant does this algorithm maintain? Give the best-case and worst-case running times of selection sort in asymptotic notation. (2) loop invariant upPseudocode: SELECTION-SORTLA) ACJUNI 按从小到大的顺序徐次排到 for j = n to max_p= 1 13 best-case: for i= 1 to j (n2) if A Ti'] > A I max-p7 $m \alpha x - p = i$ 14 WOYST- case:

O Ln2)

Swap (A Imax-p], A []])