Show that log(P(n)) is (O(logn)

P(n) = 5 k C, nk C, 21 for 0 < i < k

log(cnk) > logn log(cnK) ≤ log(n) KO≤c≤K OKNERK log(nk) ≥ log(n) log(onk) ≤ log(n) ~ valid

if K≥1 i, valid

i log(P(n))is∂(logn) log(n1c) > log(n)

3,2 Exallogk is Onlogn

 $\sum_{k=1}^{n} \log k = \log k + \log k + 1 + \dots + \log n$ $\lim_{k \to n} \sum_{k=1}^{n} \log k = \log(k)$

O { log(l)n) { nlogn : Valid

3.3 f(n)=n2

Cnt < n2 cnt<n2

if n=5 cnt = 15 if n=0 cnt = 0 $15 \leq 25$ i. valid $0 \leq 0$ i. valid

· cntiso(n2)