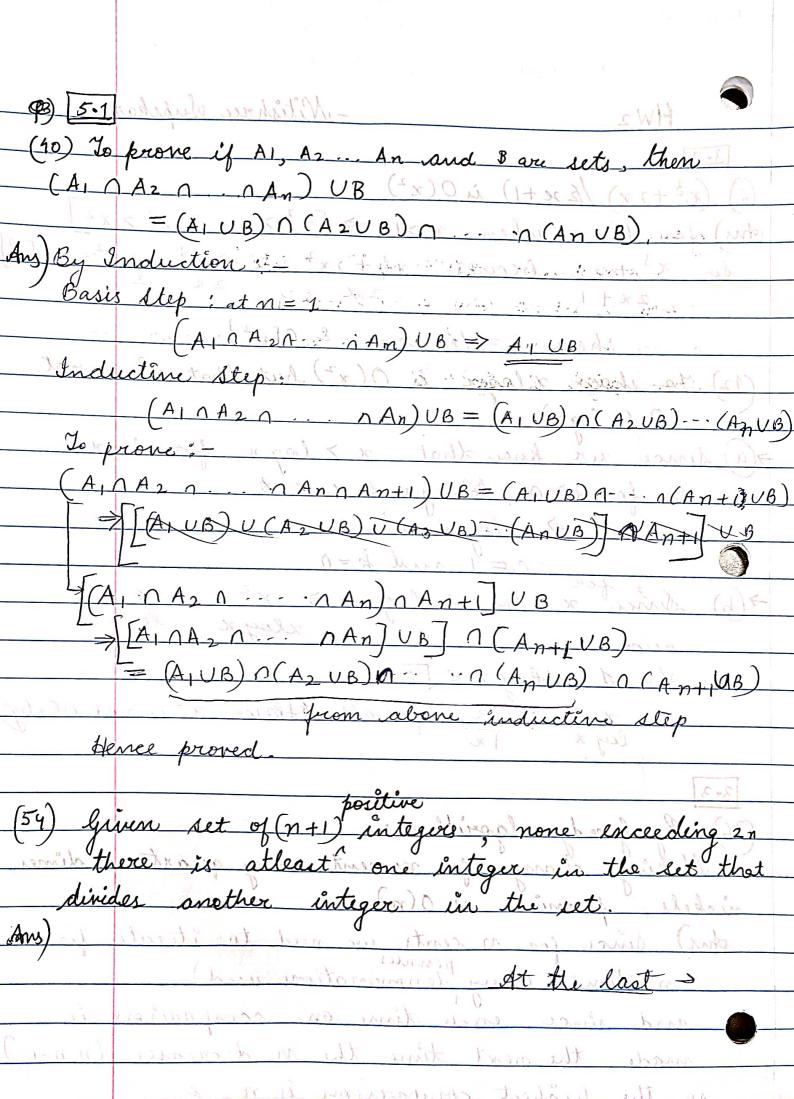
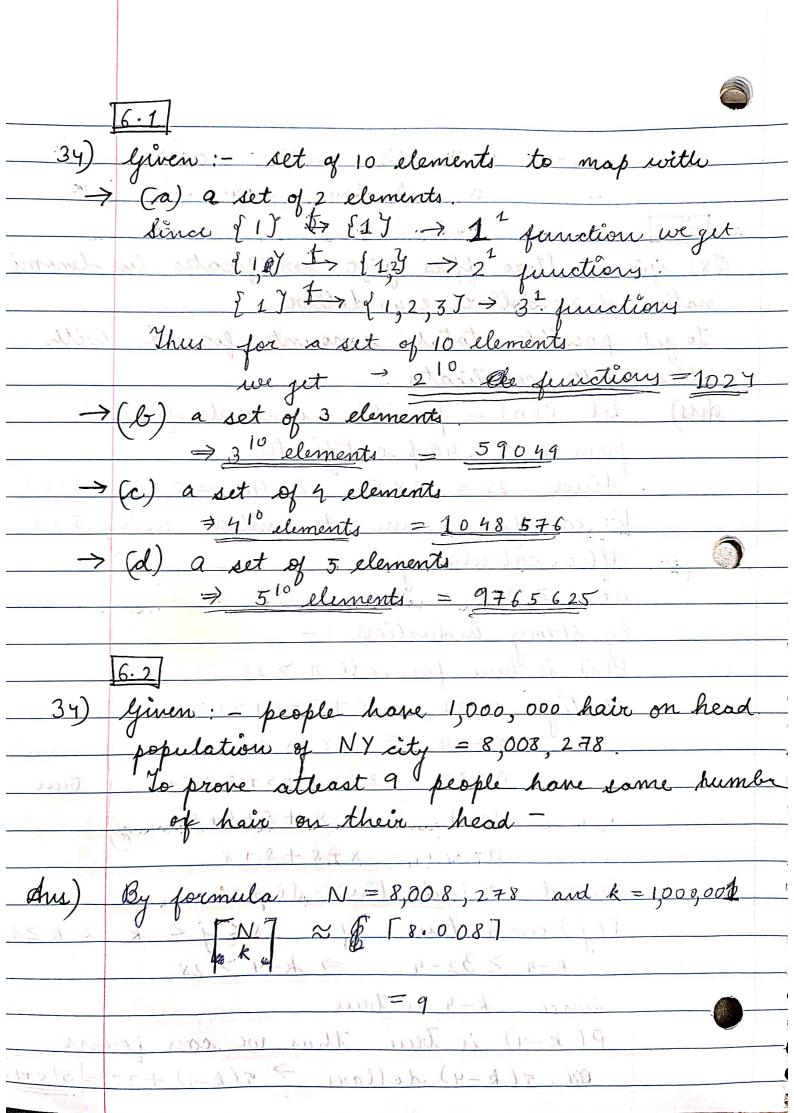
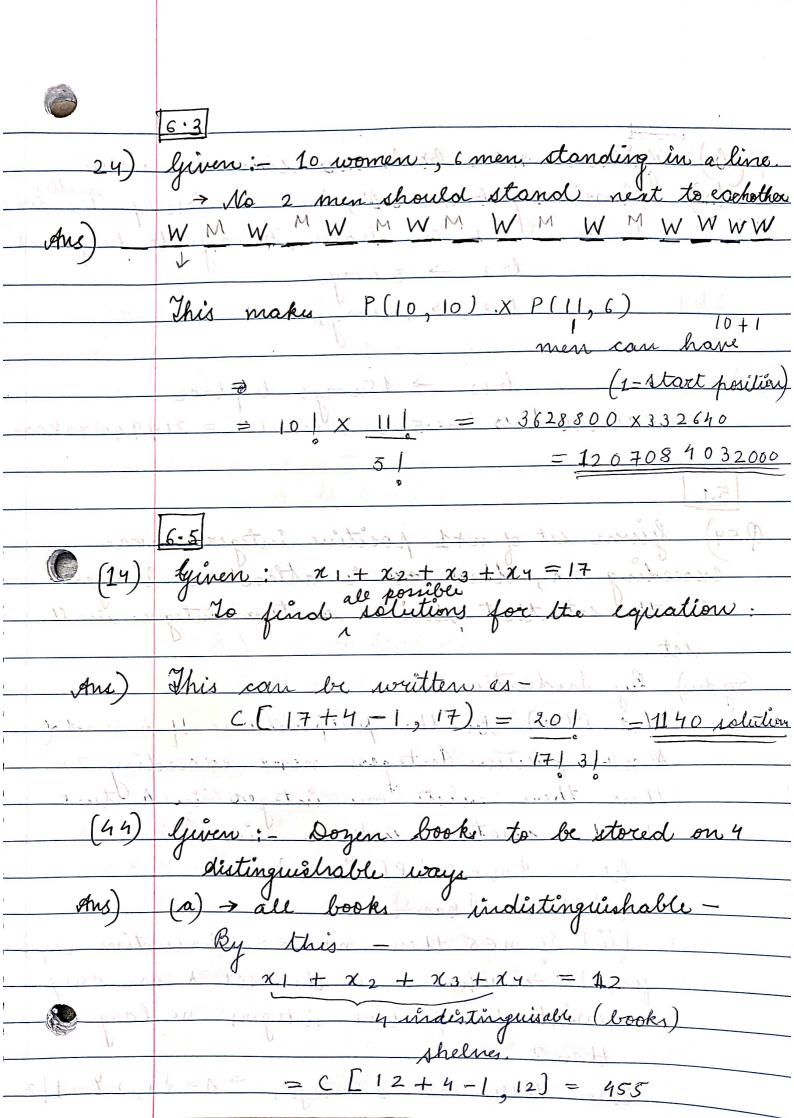
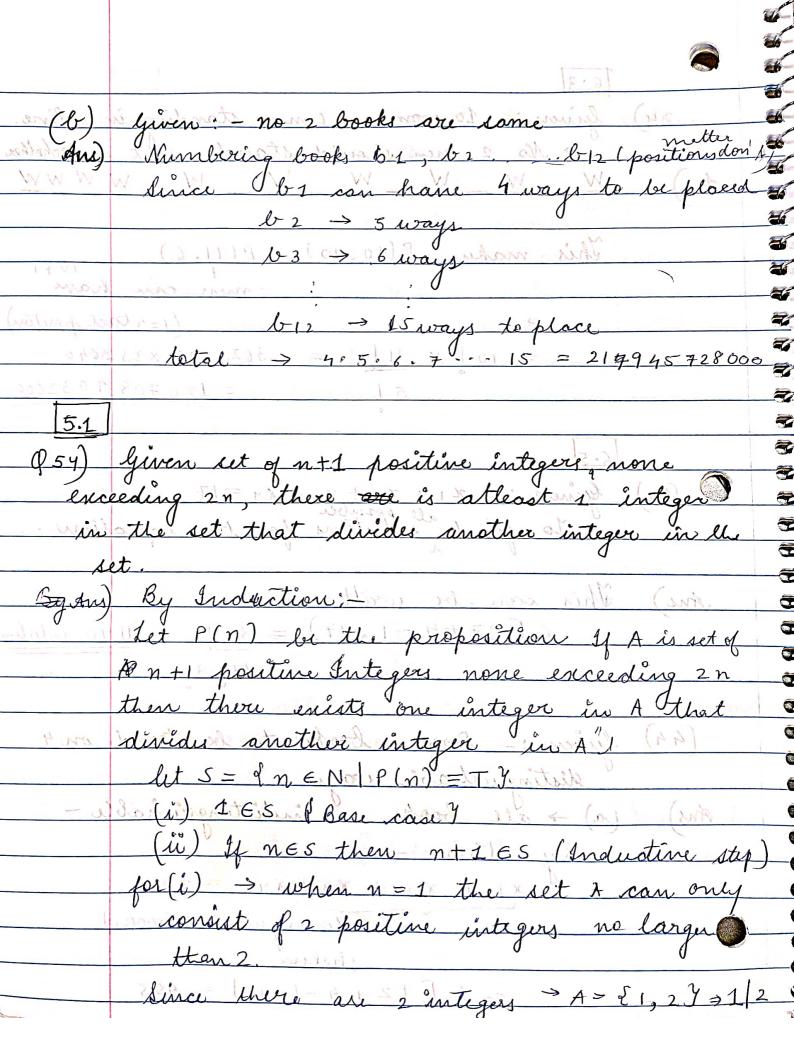
$\frac{3\cdot 2}{6} \frac{1}{(x^3+2x)/(2x+1)} is O(x^2)$ - Nitishree Supekar In this: when $x > 1 \Rightarrow [x^2 > x \Rightarrow x^3 > x^2]$ So $x^3 + 2x$ becomes $x^3 + 2x^3 = 3x^2 = C[x^2]$ 2x + 1 2x 2x 2xhere C=3/2, k=1 & O[n2] (12) To show x log x is $O(x^2)$ but that x^2 is not $O(x\log x)$ \overline{A} \overline{A} Since we know that $x > \log x$ for all x. so for n > 0; relogn L x on & The series x^2 is not $\log x \rightarrow x^2 - x$ and $\forall x \rightarrow d : \log x < \sqrt{x}$ The series $x \rightarrow d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d = d : \log x < \sqrt{x}$ The series $d : \log x < \sqrt{x}$ The se so x 7 x paratte Hence x² is not O(x(gx)) 36) By Greedy algorithm : Making change for wents using quarters, dimes, nickels, pennies is O(n) other medical n times (any denomination used) and since each dime one comparison is made, the next time the n decreases. (n, n-1.) so the highest comparison is n. & for Big O we take higher degree of polynomia , O(n)



(8) given: Store offices gift certificates in denominations of 25 dollars & 40 dollars. To get possible total amounts formed with these gift certificates. Aus) let P(n) - possible amounts formed from 25 \$ 40 \$ certificates Since 25 = 5 x 5 & 40 = 5 x8 = 5(n) We can form some & numbers ving 5 18 After calculating: By strong induction: -P(n) is true for sell n > 28. starting n=28 = 8 +5+5+5+5 250 20M=29, 4=8+8+8+5+1 / Come n=30 = 85 + 5 + 5 + 5 + 5 | tue -n=31 = 8+8+5+5+5 n = 32 = 8 + 8 + 8 + 8Jecond Fiduction Step : β(j) comis tour if 28≤ j ≤ k 2 k ≥ 32 k-4 = 32-4 => k-4 > 28 since k-4 is true P(k-4) is bue thus we can form PO(.5(k-4) dollars > 5(k-4) +25 = 5(k+1)







for industine hypothesis Assume P(n) is true OR of A is a set consisting of n+1 positive integers no larger than 2n, then there exists elements a, b \in A so that a lb. We need to prove P(n+1) is true: -P(n+1) is statement > " If B is a set of (n+1)+\$1 positive integers, none exceeding 2 (n+1) then there is atleast I integer in B that divides another integer in B. Sare 1 4 2n+1 & B & 2n+2 & B then every element in B is less than or equal to 2n. Take out one element x from B. None enceed 2 n. none enceed 2 n. a, b EB (x y so that a / b. Since a & b are in so then 2 dements directes other. Case 2 If 2n+1 deB or 2n+2 & EB but not both so for every element in B is tess than or equal after taking it out met of n+1 elements remain. and none exceed 2n. They by hypothesis at b alb. and these elements are in B. Case 3 of 2n+1EB & 2n+2EB. If we throw 2n+1 out == 2n+2 is in B which is more than 2n. and same for 2n+1. Consider B/82n+24 and add element n+1 at n+1 \$B This gives us set C=(B\\2ntzy)

now If there is an element a EB that divides n + I then it must divide 2 (p + 1) also. So now we throw 2 n+2 out so there is no element in a that can possibly divide by n+1 Thus we have a set c that contains n+3 positive integers & exerctly one of them enceds 24. This case is reduced to und previous case and thus true.