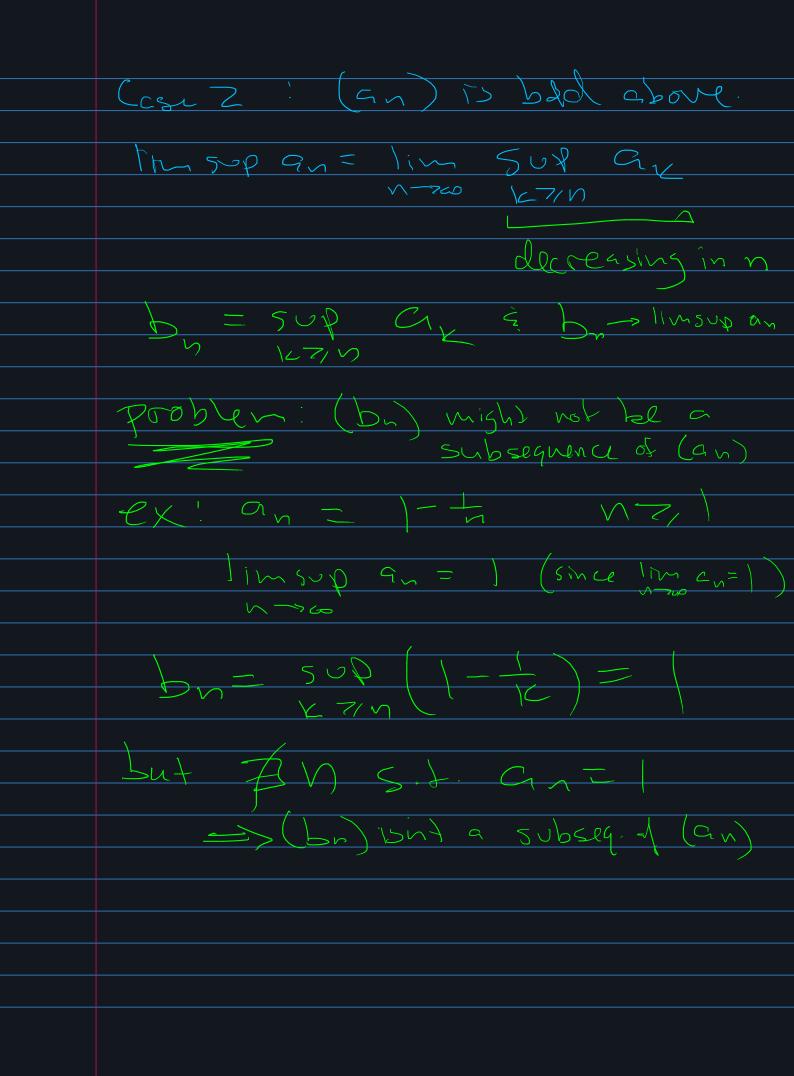
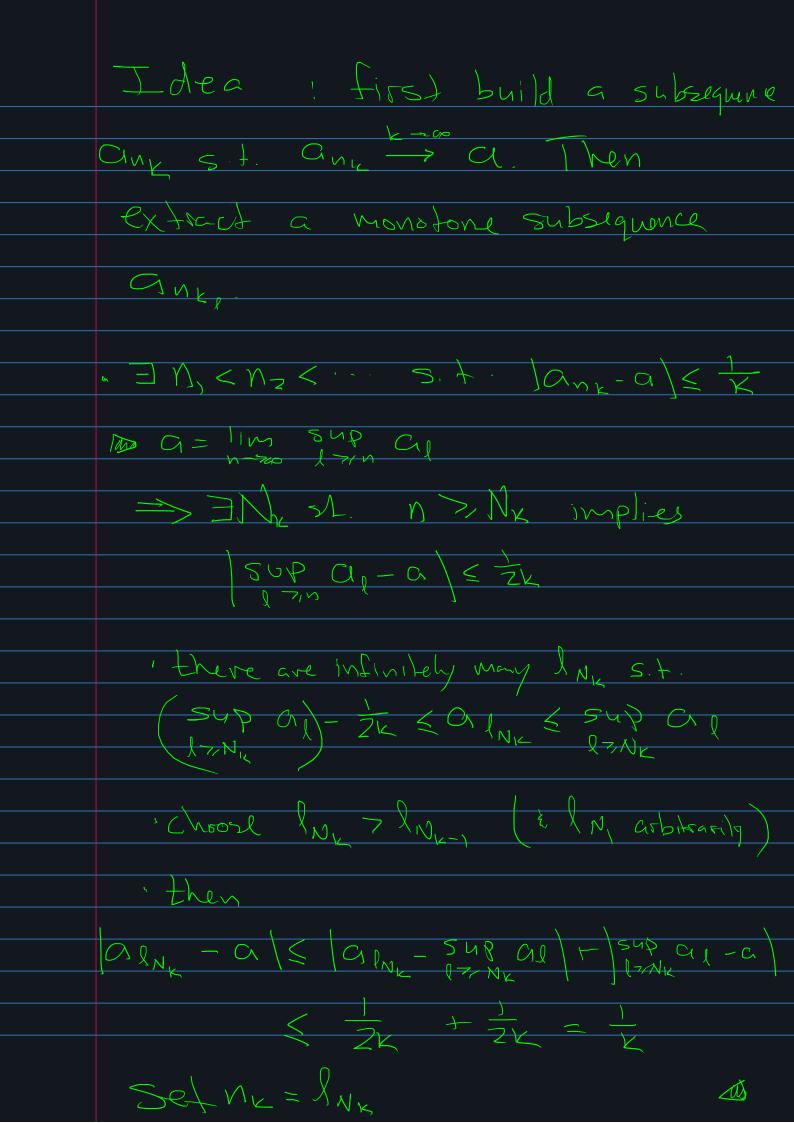
Problem 24 $\lim \sup (-an) = -\lim \inf (an)$ Hint: suffices to prove Sup(-A) = -infAWhere ACIR 2-A={-a:aEA} Worksheet problem) On has a monotone SUBSEG Anx 5/ CIUZ MASOR CINTIA Cese 1: (an) is until above let n, = min {n: an 7/1} $M_2 = Min \{ N7n, O_N > 12 \}$ $\Rightarrow \alpha_{n} < \alpha_{n_{Z}} < \cdots$ $\alpha_{n_{N_{Z}}} \rightarrow \infty \quad \text{as} \quad k \rightarrow \infty$





Now extract a monotone subseq from (any (in general any sequence has a monotive subsequence D-1 L1 5= {k: an >ank + 1>n} be the set of "valleys" of (ank) -if Signifimite, then Olyk, < Cruz < ... is monotone. if S is finite, then JK, 7K
for UKES. Since KifS 3K2>K, sit. anx same Since K295, 3k3 > K25.+ ... $\leq \alpha_{n_{k_1}} \geq \alpha_{n_{k_2}} \geq \cdots$ Since was and = a & (ank) is q Subsequence of (anil) from Chykl= a

HW Problem H Musup (Gutbn) zatb Try exempli $G_{N} = 2^{N}$ $b_{N} = 3^{N}$ a= 10m sup a 5n = 2 D=1~5~P 5~7 = 3 $\left(g_{n}+b_{n}\right)^{n}=\left(2^{n}+3^{n}\right)^{\frac{1}{2}}$ $= 3\left(1+\left(\frac{2}{3}\right)^n\right)^{\frac{1}{2}}$ $\rightarrow 3 \neq 2 + 2 + 3 \cdot \text{max}(a,b)$ $Mex(a_n,b_n) \leq q_n + b_n \leq 2 mex(a_n,b_n)$ Mcx (5 n 13 n) 19 5 (9 n +3 n) 1/2 2 to max