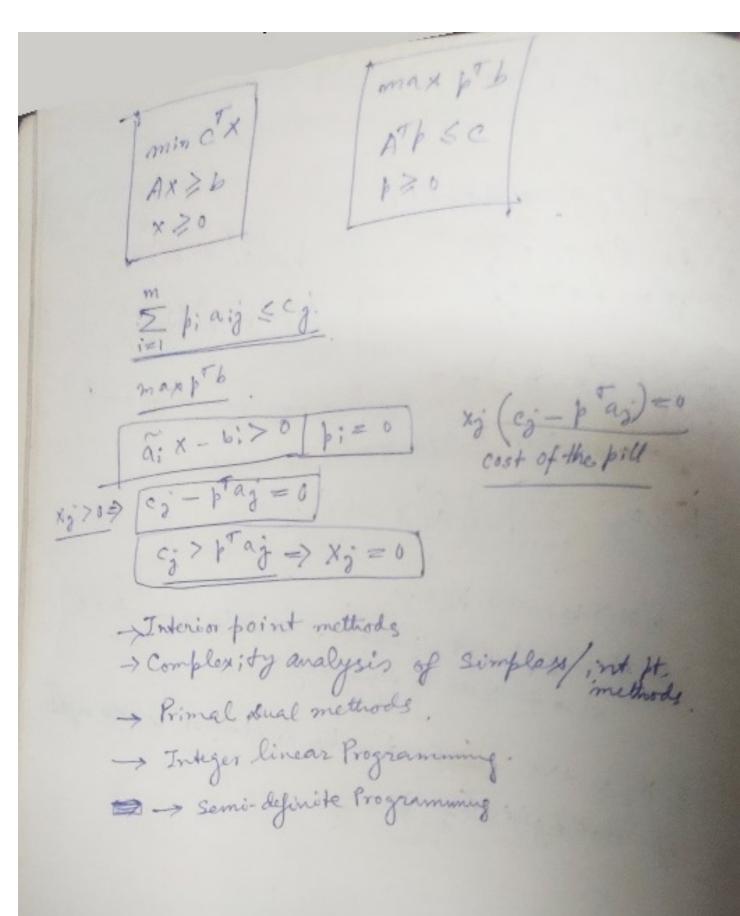
25.10.05 Dual frimal. max pt b min CX ATPZC AXZb 120 X70 If x is primel feasible & Y is dual feasible, we have, cT X > pTy } Sensitivity analysis Farka's lemma AX = b or pTA > 0 }

X>0 or pTb<0 X primal I = [x = bi] aid≥o, YieI. must be ct d>0 $A(x^*+\epsilon d) \geq b$

) aid 20 iEI (hes no & cTdCO (solution a; is the ith row CT (x*+ Ed) = cTx"+ E CTd Application to asset pricing Market Single period - n different assets are traded. - m possible states of nature. - 1 mit of asset i gives Rs. 75; if R. = frsi: s < m, i < n} X = (x1, x2, ..., Xn) amount of each pecurity Rx>0 h= (k1, k2, ..., kn)

No arbitrage principle ptx <0 has no solo Them pTX20 20 30 3 2 30 S.t. 2 T R = pt. give 11 unit of or, $p_i = \sum_{j=1}^{\infty} (2j)^{k} j^{i}$. price Pi = EgRj. Complementary Slackness min ctx agual max pt 6 AXZb X > O ATPSC p ≥ 0 * x + p are primal of dual optimal iff 1* T (AX - 9 = 0 * (c-ATF) * = 0

AXD AT PEC STASKA XS ATA CX = pb since oftimal. bi (ãi x-bi) = 0 => cx-FAX=0} (cj - + aj) xj = 0 Σ p: (α; x - b;) = 0 & each term is the. 1:70, Ep. (a:x-bi) =0 高×>b:=0 constraint is tight & dual variable is zero - this is also possible - degeneracy. if xj is +ve constraint in the dual must be tight if not tight x j is o.



Sandivid Senstivity Analysis min Cy suppose B is the oftimal basis X8 = 8 6 CN-CBBNZO reduced cost 8 670 (each & every element) 6-> Ettore 6+16 XB = B (b+0b) = B b + B 0 b obj function = CAXX = CRT (XB + B 46) = CBXB + CBB Ab = CBX3 + (PTOB)

to is the marginal of rice (32 + b) B (b+ bb) > 0 B Matrix games Finite, two-person, zero, sum, one A 2 2 1 0 1 3 2 -1 0 -A= (aij: i sm, 8 5 m) 5 = (71, 72, ... , 7m) $C = (c_1, c_2, \dots, c_k)$ E(1,0] = \(\frac{1}{2} \arightarrow \frac{1}{ maxo min E [7,0] max E[r,e]

max min E[T, c] < max E[T, c] ≤ E[r, ~] ≤ max E[r, ~]. min E[r,c] = \[\tilde{z} airocg. cz (c1, c2, - , cn) Zaij Ti (pure strategies) Result Fa strategy r'Elin Simplex in m dimension CESn and a no. U such that E(r,c) >. 0 +c? E[r, c') < u + r.