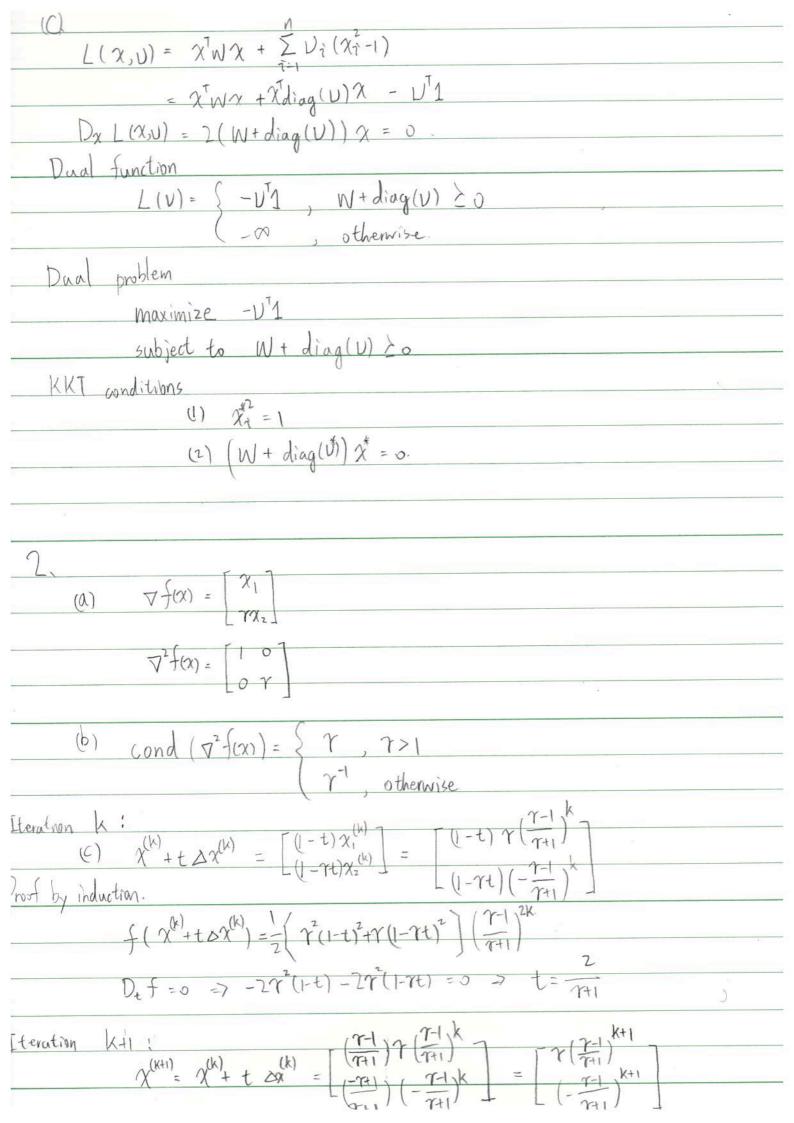
$L(\chi, U) = \frac{1}{z}\chi^{T}P\chi + q^{T}\chi + r + U^{T}(A\chi - b)$ $D_{\chi}L(\chi,U) = P_{\chi} + q + A^{T}U = 0 \quad \Rightarrow \quad \chi = -p^{T}(q + A^{T}U)$ Dual function: g(V) = - \frac{1}{2} \left((q + ATU)^T p^{-1} (q + ATU) \right) - UTB + r Dual problem! maximize - 1 ((q+ATV)Tp'(q+ATV) - VTb + r. KKT conditions $(2) P_{\chi}^{*} + q + A^{T} \mathring{J} = 0$ $(3) L(\chi, \lambda) = C^{T} + \lambda \begin{bmatrix} A \\ -1 \end{bmatrix} \chi - \begin{bmatrix} b \\ 0 \end{bmatrix} \qquad D_{\chi} L(\chi, \lambda) = C + \begin{bmatrix} A^{T} & -1 \end{bmatrix} \lambda = 0$ Dual Function: $g(\lambda) = \left\{ -\lambda^{T} \begin{bmatrix} b \\ -1 \end{bmatrix} \right\} = 0$ - 00 otherwise Dual problem: maximize -27/67 subject to 2 0 C + [AT -1]) = 0 KKT conditions: (3) x*T([A]x*-[b]) =0 (4) C+ [AT -1] 2* = 2



$$(d) \Delta \chi_{nt} = -\begin{bmatrix} 1 & 2 \end{bmatrix} - \begin{bmatrix} \chi_1 \\ \gamma \chi_1 \end{bmatrix}$$
$$= -\begin{bmatrix} \gamma \chi_1 \\ \gamma \chi_1 \end{bmatrix}$$
$$= -\begin{bmatrix} \chi_1 \\ \gamma \chi_1 \end{bmatrix}$$

(e)
$$\chi + \Delta \chi_{nt} = 0 < 10^{-6} \Rightarrow 1 \text{ iteration.}$$

3

- (a) F
- (b) T
- (c) F
- (d) T
- (e) F
- G) T