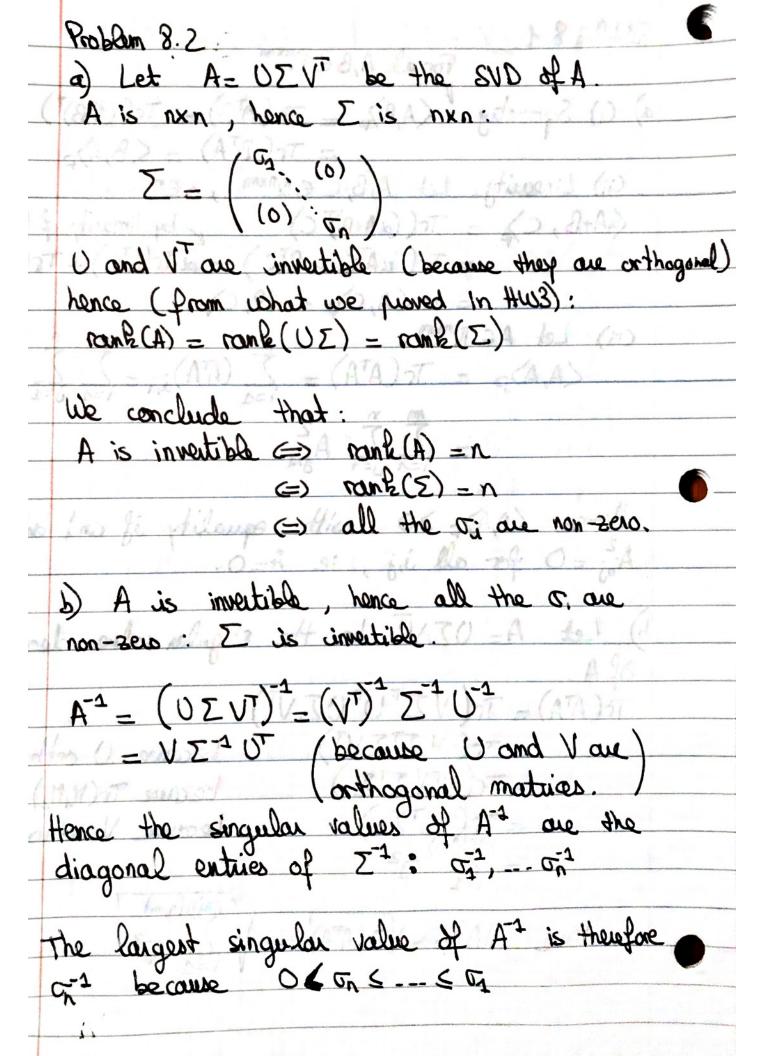
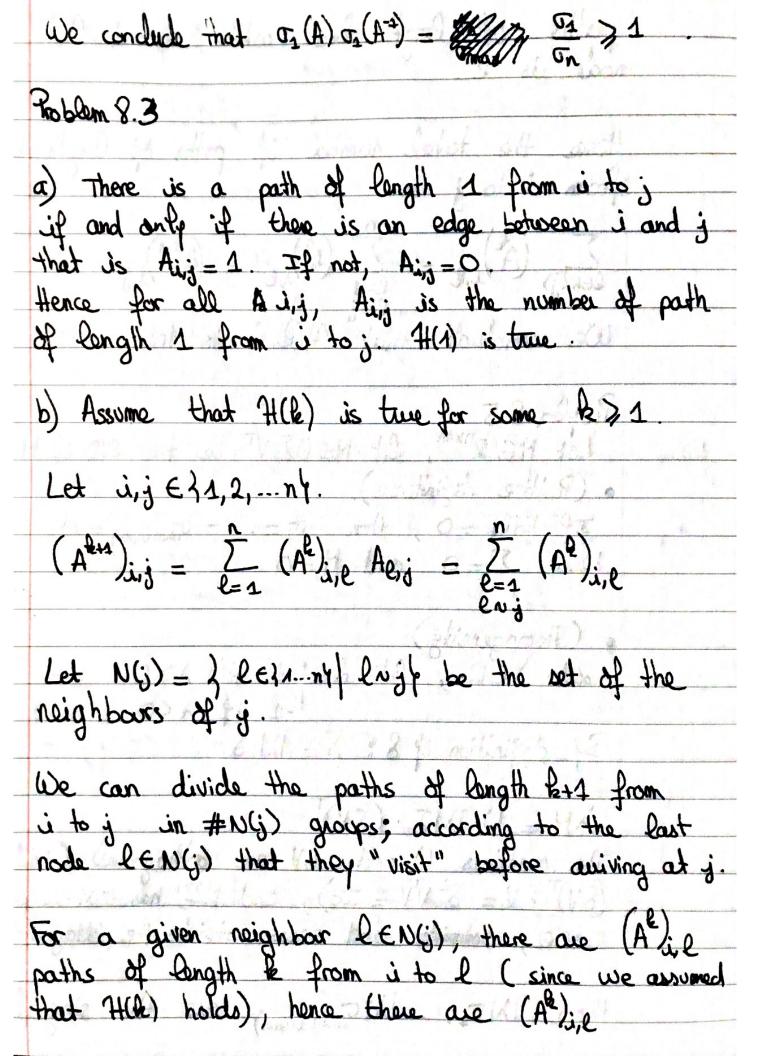
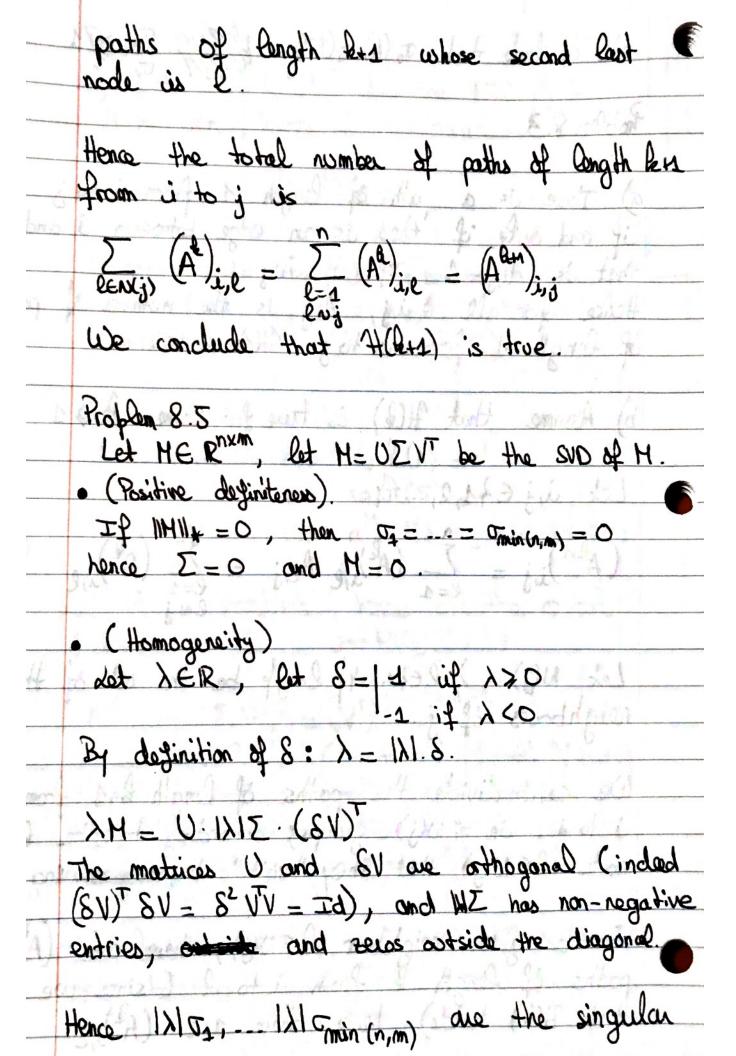
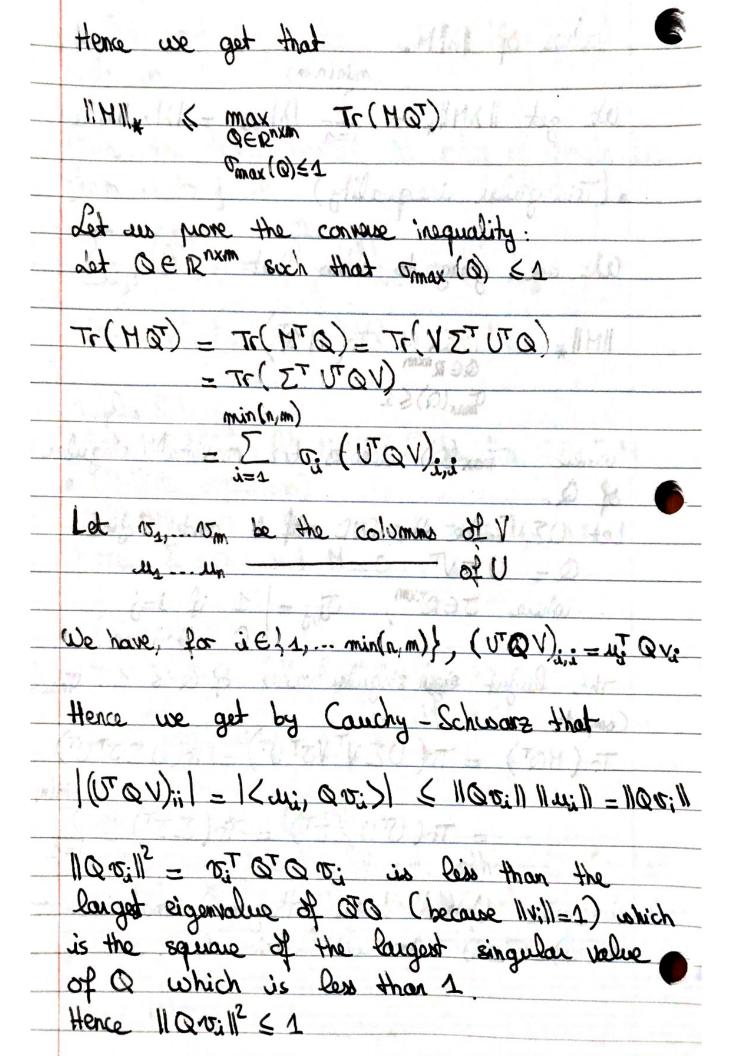
Robben 8.1 For all A, B ∈ Rnxm a) (i) Symmetry. (A,B)= Tr(ATB)= Tr((ATB)T) (ii) Linearity. Let A, B, C & Rnxm, a ER (aA+B, C) = Tr((aA+B) C) by linearity of the trace = Tr(aAC+BC) = aTr(AC)+Tr(BC) a (A, C) + (B, C)  $\langle A, A \rangle_{F} = Tr(A^{T}A) = \sum_{i=1}^{T} (A^{T}A)_{i,i} = \sum_{i=1}^{T} \sum_{j=1}^{A^{T}} A_{i,j}^{T} A_{j,i}$ Hence  $(A,A)_{c} \ge 0$  with equality if and only if  $A_{i,j}^2 = 0$  for all i, i.e. A = 0. Let A = UIV' be the singular value decomposition VITU OIVI) because U orthogonal because Tr(MM2)=Tr(M2HA) I Tr ( IT I because V orthogonal Honce MANG = VTr(ATA)







	values of 1/2 M. min(n,m)
	min(n, m)
	We get 11 x 11   = =
	· (Triangular inequality)
	We are going to show that
	IIMII * = max Tr(MQT) - CH) T
_	$\sigma_{\max}(Q) \leq 1$
	where max (a) denotes the maximal singular value
	of Q.
	Let UEVT be the SUD of A and define.
	0 = 021/2
	where $J \in \mathbb{R}^{n \times m}$ $J_{ij} =  1 \ i \neq i = j$ $0 \text{ otherwise}.$
	The largest eigen singular value of Q is 1: That (0)=1.
	Competer 5 12 12 12 12 12 12 12 12 12 12 12 12 12
	$T_{\Gamma}(HO^{T}) = T_{\Gamma}(U\Sigma V^{T}VJ^{T}U^{T}) = T_{\Gamma}(U\Sigma J^{T}U^{T})$
3	- A:41 1:001 2 (000; 11) - (000) min(n, m)
	$= Tr(U^T U \Sigma J^T) = Tr(\Sigma J^T) - \sum_{i=1}^{min(n,m)} C_i$
_	2000 parts 3000 300 10 60 10 60 10 10 10 10 10 10 10 10 10 10 10 10 10
No.	because U and V are orthogonal matrices and Tr(AB)=Tr(BA) for all matrices A, B
-	Tr(AB)=Tr(BA) for all matrices A, B
	the most policy of the contract of the



We conclude that ( UTOV) in & 1	and that
$Tr(HQ^T) \leq \sum_{i=1}^{min(n,m)} T_i = \ H\ _{\star}$	
This proves that max Tr(MQT) & 11H11+  GERNAM  TMAX(Q) & 1	
Consequently: 114114 = max ### Tr(HOT  GERENAM  GMAX(Q) S1	
Let now A, BERNAM	
$  A+B  _{\#} = \max_{\mathbf{C} \in \mathbb{R}^{n \times m}} \left( Tr(A\mathbf{G}^{T}) + Tr(B\mathbf{G}^{T}) \right)$ $Tr(\mathbf{A}\mathbf{G}^{T}) + Tr(\mathbf{B}\mathbf{G}^{T})$	
	= IIAN+ IICH+