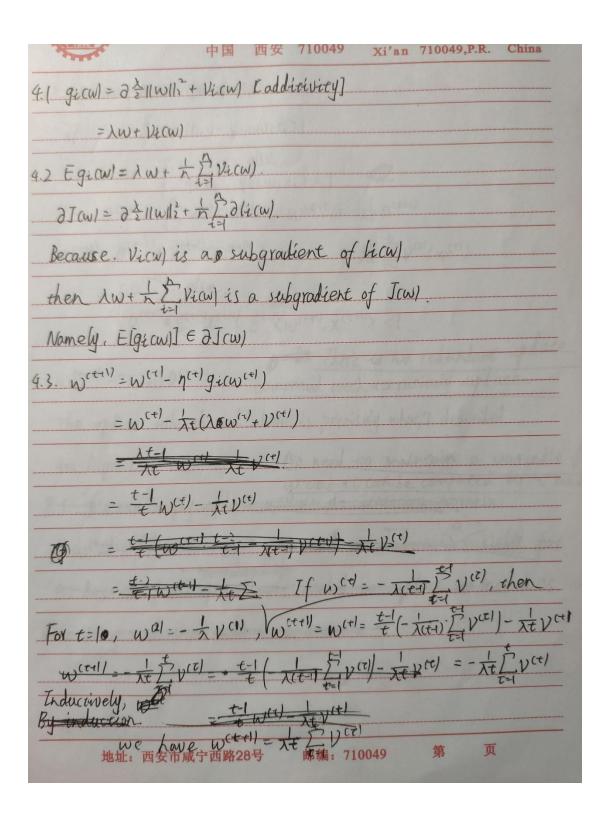
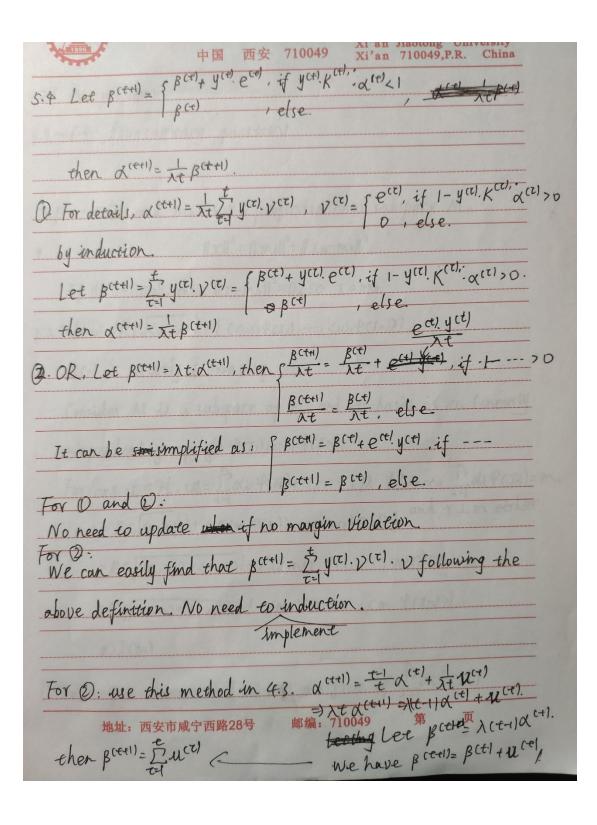
7 0 0 万 久 四 入 字
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21. K = X · X T
= 10 < xi xy 2 ij
11 Xi-Xj11 = X(Xi-Xj, Xi-Xj)
$= \sqrt{\ X_i\ ^2 + \ X_j\ ^2 - 2\langle X_i, X_j \rangle}$
If we know K. we have sill xill = < Xi, Xi).
$ X_{j} ^{2} = \langle X_{j}, X_{j} \rangle$
<xi,xj)< td=""></xi,xj)<>
Hence, the distance between xivx; and their norm can be given
The state of the s
3-1 J(w) = (Xw-y) + Nw!w
= wTXTXW + 2WTXTY + 2WTXTY + YWTYTY
$\frac{1}{2\pi}\int_{-\infty}^{\infty} (w) = \frac{1}{2}\left(\frac{x^{T}}{x}w - x^{T}y + \lambda w\right)$
$(X^TX+\lambda I)\omega^* = X^Ty, \omega^* = (X^TX+\lambda I)^{-1}X^Ty.$
XX+XI mure be positive definite when 1,>0.
So it's invertible
The state of the s

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3.2 XTX. XTX+2XTX	= XTy if)	(7x=w*		
XTCX.XT+AI) &=	x y.			
TO X = CXXT+X	11-1 y. can	hold thi	is equation	
Meanwhile, X.X	T+ AI is in	vertible s	ince it's positive de	finite.
So w = X \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	< = (X· X ^T +λi	114	18000	
3.3 W=XTX	MARINA S		A Treat	
= (X1, + XN).				
= Delin Xi				
w spans all Xi	so it is s	aid to be	in the span of dato	L
3.4. Proved in 3.3		1		
3.5. Xw = X. XT.X	A STATE OF THE STA			
= K.d.			A pro-	
= @ K CK+ \ 1	114			
3.6. f(x)=x7 w*		Kx= x7. X7		and 100, 100 and 100 and 100 and 100 and
= x ^T · X ^T · X		$=\chi^{T}(\chi)$;··-, XN)	
= Kx (K+)Z	144	$\chi^{T}\chi)=$	(1 X X X N)	
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8.1.1. For	Tikhonov	regul	larization,	if:
		J		4

f € argmin[\$cf) + xolf)]

Let r= Mcft, its Ivanov form is:

argmin \$(f)

If $f^* \notin argmin \ \phi(f)$, there will be f' satisfying $\phi(f') < \phi(f^*)$. $\phi(f') + \lambda \mathcal{L}(f') < \phi(f^*) + \lambda \mathcal{L}(f^*)$

Hence, fre argmin &cf)

8.2.1. The Lagrangian function for Ivanov regularization is:

LCW, XI = PCW) + X[CCCW]-r]



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O E arg max go	x) .		
Hence, $\lambda^{+}>0$.	Because of compleme	eneary slackness	. (Ncw*)=Y.