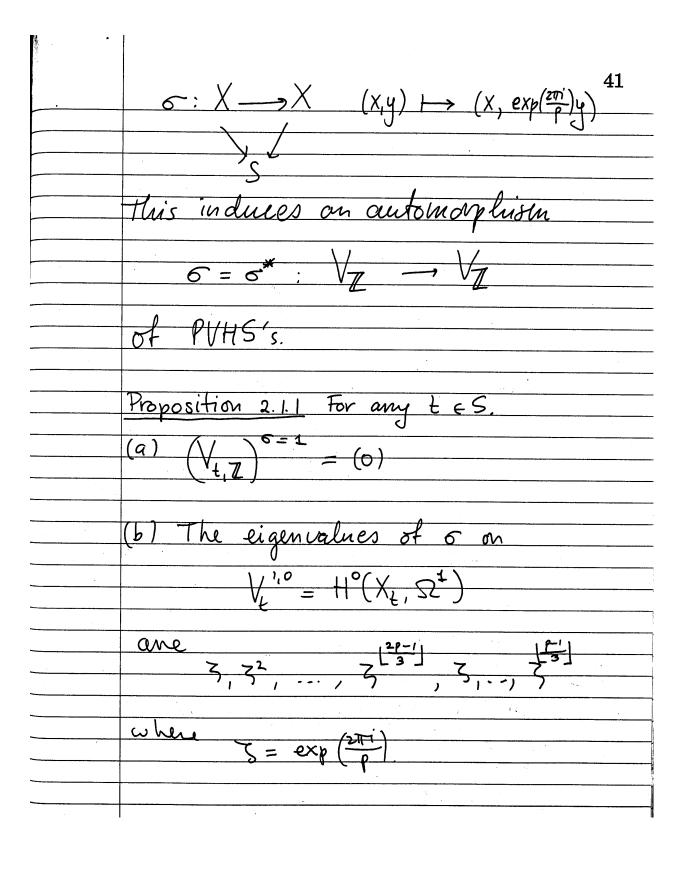
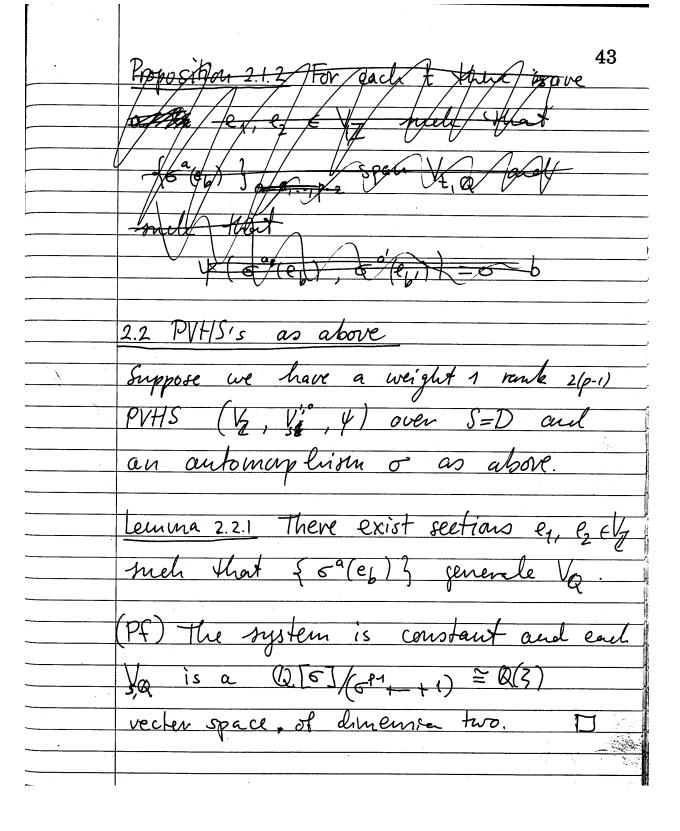
40	Leeture 2
	2.1 The families
	In this leeture we study the families
	f. X- 5 of nonsingular projective
	curves with affihe equation
	ι
	$X_{t} : y^{p} = X(x-1)(x-t)$
	over the base $S=\mathbb{P}^1(\mathbb{C})\backslash \{0,1,\infty\}$
	where p is a prime > 5. By Riemann -
	there witz
	genus $X_{+} = P-1$,
	Hence
	D1 7
	VZ = R7* /
·	is a rank 2(p-1) weight 1 PVH5 ones
	Consider the centomorphism over S



hence this follows as X/(67 = 1P. by exhibity a (-basis for H(X, D!): Then eg above



	Conclusion 2.2.2	:0
	Conclusion 2.2.2 $\frac{\lfloor \frac{p-1}{3} \rfloor}{\lfloor \frac{p-1}{3} \rfloor}$	
	$V_{5}^{1,0} = \begin{array}{c} & \\ \end{array} $	(j)
	$j=1$ $j=\lfloor \frac{p-1}{3}\rfloor+1$	
	for certain $T'=T'(s) \in \mathbb{C} \cup \{\infty\} = \mathbb{P}^{1}(s)$	(10)
	The conditions for a PVHS:	·
	(1.1.4): $\tau^{(j)}(s)$ is two maplic for $s \in I$	
	(1.1.5): condition is void	
	$(1.1.6.1) : \Psi(e_1^{(j)} + \tau^{(j)}_{2}, e_1^{(j)} + \tau^{(j-j)}_{2})$	
	this means that T dete	mue
	$\frac{T^{(p-j)}}{T} = \frac{1}{3} + 1, \dots = \frac{2p-1}{3}$	-
7.7 .6	(1.1.6.2): Ti(s) lies in a (nonempty)	
	open disc f (V(j)).	
Ψ.	(Note: \(\tau^{(1)} \in \text{f} \(\text{\sigma} \) \(\tau^{(rs)} \in \text{g} \) \(\text{f} \) \(f	
		17 17 the foreign of the second secon

Conclusion 2.2.3 For p=5 (resp. p=7) the function T(2): D -> f(2) (rop. T(3)) determines PVHS and so there is a "universal" PYHS's one g(2) (vep. g(3)). For p>11 the "universal" variatia lies Oven a product by of clisco.

(Eg. for p=11 h x h.) > 2 oph) 2.3 CM Hodge structures of Weight 1 (2.3.1)(9) An abelian variety A/C is said to CM (complex mulkiplications) if there exists a communitative subalebra K C End(A)@,Q with [K:Q] = 2 dim (A).

•	$oldsymbol{+}$
	<u>,_</u>
	(b) For a left of B 115 V 120 147
	(b) For a wt 1 Q-HS Vg we went
	say it has CM if there exists
	K C End (Va)
	K C End (Va)
	K commutatre [K:Q]=dung(VQ).
<u> </u>	704.
	Proposition 2.3.2. In the situation of
	2.2.3, there is a dense set of I (2) (h)
	with p=5 (very p=7)
	1 11 1 11 a conscionated Had a should
	mel that the associated Hodge structure
	has CM. [Note: for p=11 eg qt cluse in j x j.]
	D (Idea only.)
-	Proof. Take a self adjoint or anti-net
	adjoint TE End (Va) communitate with
	adjoint TE End (Va) commuting with
	o and let The be met that
	be an eigenvector for T. Then
	K=Q[3,T] C End(Va) will work.
	(1 och (hicky) 4 + 57) (1P1/1/(2)) is the
	Check (tricky) that IT 3 CP(V(2)) is cleare.

POP P