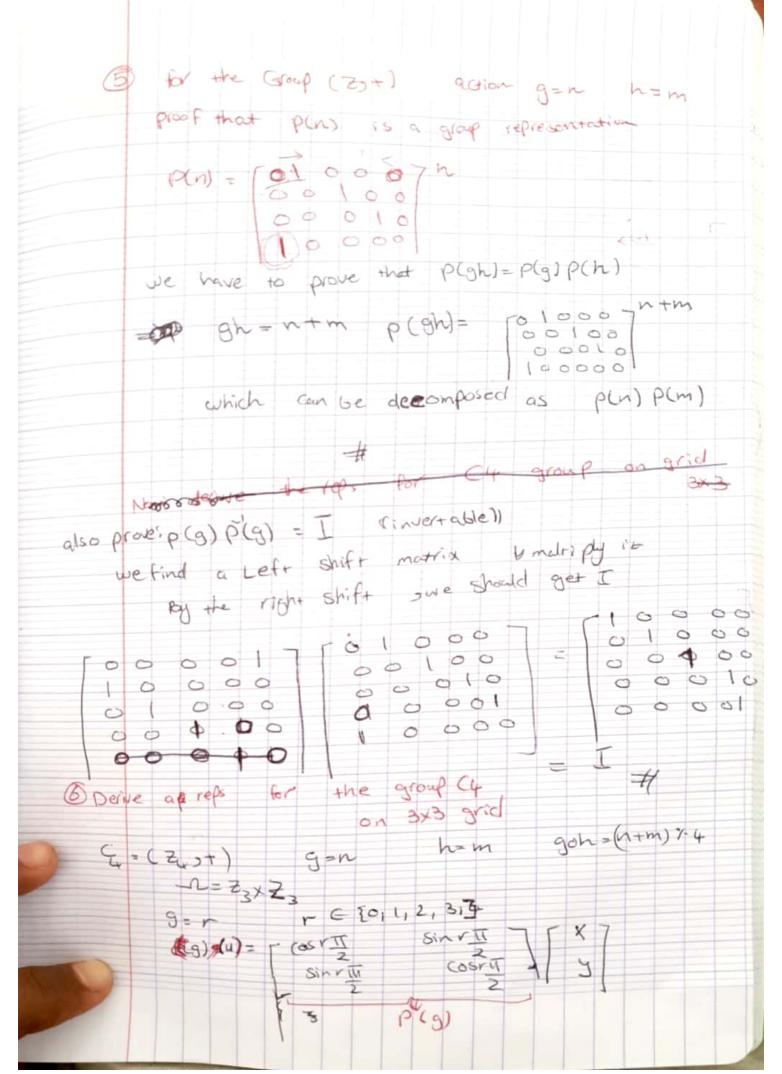
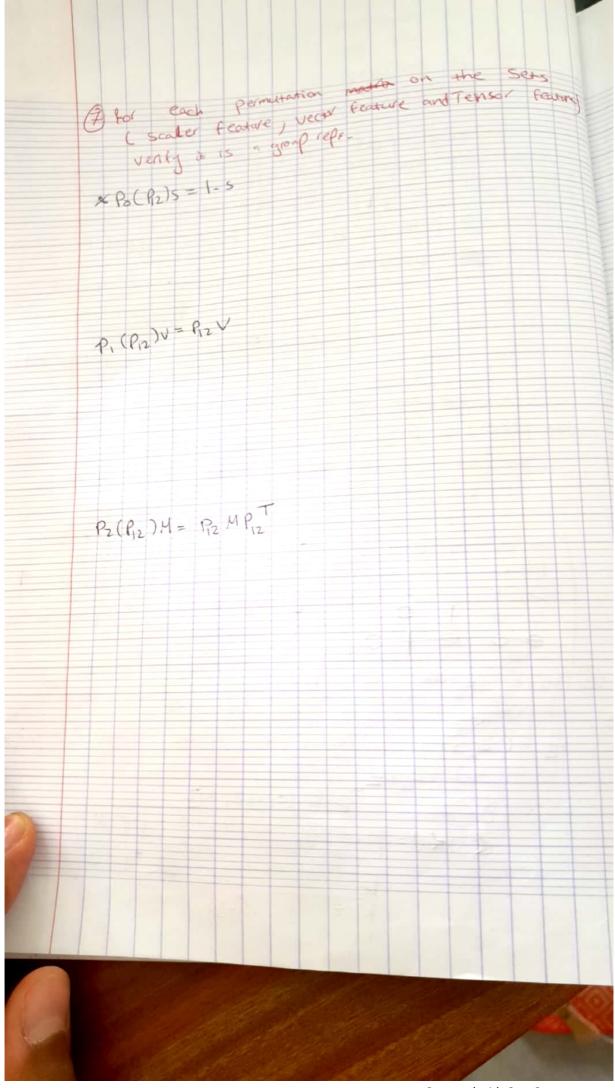
Problems 2
- Lower bound of generalized error for lipz Functions
The inner product satisfy axioms?
solution: The axioms are: $\langle ax, yy \rangle = a \langle x, y \rangle$ $\langle xy \rangle = a \langle x, y \rangle$ $\langle xy \rangle = a \langle x, y \rangle$
$\langle x, x \rangle > 0$ $\langle \alpha x, y \rangle = \int \langle \alpha x \alpha x \rangle_{2} g(\alpha) \geq d\mu(\alpha)$
= a S < x coo , y an > dy cu)
and the remaining axioms can be proved in a similar manner
2) can you think of other weight space symmetries?
change the signs of the weight 4 bigs thatrices for the 1st 1 2m layer in the MLP, taking an odd activation Function like (tanh)

3 Explain uny , F we knew all symmetries of L, we
because it we know all symmetries of L that
includes all transformations, we can generate all possible examples from only one example-
a verify that Endie Euclidian planar motions del is
(O) = + > ty) 1 (x14)) > (SSE) SINE tx } \$
(0, 0 tx, 0 ty,) 0 (02 0 tx2 0 ty) = (0, +02) tx, +tx2 ty, +ty
to show the state it's a group it should
sarisfy: Yg,h C C7 (gh) u = g (nu) 3 e c G eu = u
$g = (\theta_1) + (1) $
= 9 (x0502+ 45000 + 5x2 x5m0 + 140502 + Ey2
[1
or Mains mulmphraen on 23 associance

	$(9h) u = \begin{pmatrix} \cos\theta_1 & \sin\theta_2 & \frac{1}{2} \\ \sin\theta_2 & \cos\theta_3 & \frac{1}{2} \\ 0 & 0 \end{pmatrix} \begin{bmatrix} \cos\theta_2 & \sin\theta_2 & \frac{1}{2} \\ \sin\theta_2 & \cos\theta_2 & \frac{1}{2} \\ 0 & 0 \end{bmatrix}$
	$\Rightarrow = \begin{bmatrix} \cos\theta_1 & \sin\theta_2 & tx_1 \\ \sin\theta_2 & \cos\theta_2 & tx_1 \\ \cos\theta_1 & \cos\theta_2 & tx_2 \end{bmatrix} \begin{pmatrix} x \\ \sin\theta_2 & \cos\theta_2 & tx_2 \\ y \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ y \\ 0 & 0 & 1 \end{pmatrix}$
	because Harrix Mustriphroation is associtive
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
	$\theta = 0^{\circ}$ l $tx = ty = 0$ $\Rightarrow e = I$ (I dentity metrix)
Э	$\begin{array}{c c} e & \begin{bmatrix} x \\ y \end{bmatrix} & \begin{bmatrix} x \\ y \end{bmatrix} & = y \end{array}$
A	=> eu = 4 her (0/ +x/+4) & a group autim
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composition.	that if it are all equivarient, so their on. We need to snow (8) Rt10 R (4) Rt10 R (9)
= (fin of (g)) = fin (g) (fing) of) Fin of (g)) of = fin (g) o (fin of)
show the	re proved equivariance * not convolution is translation equivariant but rotation equivariant v blution is defined as a
Con	put y > y+ = leave out the sum
con	Howe to show that translation the same as Rollowed by translation is the same as solution fallowed by translation Assignation $Assignate S$
	$\frac{1}{2} \frac{1}{3} \frac{1}$

