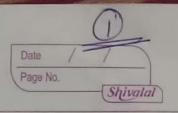
1-lander



Krishna Pandey

Ans-1- A = {a,b,c} n=3

 $n[p(A)] = 2^n = 2^3 = 8$

P(A) = { { }, { a}, { b}, { c}, { a, b}, { b, c}, (c, a)

A= {1,2,3,4,5}, B= {a,b,c,d,e}

ω ((1, a), (1, b), (2, d), (3, e), (4, ()).

Not a function as I has 2 images

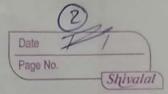
(1,9), (2,6), (3,d), (4,0), (5,0) Yes Function, neither one-one nor onto

(2,6), (3,d), (4,c) } it is not a function as 5 has no image

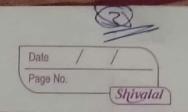
D{(1,9), (2,9), (3,6), (4,0), (5,e)} Yes is a function but not one-one neither onto

e {(1,a),(2,b),(3,e),(4,c),(5,d)} Yes is a function one-one and onto

In above care every one-one function is also an onto function & vice vorsa because when the function will be one-one it will have all elements images and since both have equal no. of elements so must be onto also.



	Shivalai
3	G1 = {R, .}
	Lo hanosto
	② (Z,·) → Not a subgroup for + Ji E Z
	for # J; E 7
-	- Associativity follows
	$(J_1 \star J_2) \star J_3 = J_1 \star (J_2 \star J_3)$
(Co	11 11 11 12 13 13 13 13 13 13 14 + (A) 9 1
Ves	- Claser follows
	as I, *I2 = I
19.1	0607-8 1248,513 xA 15-6
-	- Identity follows & exist
	let e be identity [e=1]
mi S	I.xe=I h toly.
	(e=1)
	(02),0,0,0,0,00,000,000)
- No	→ Invense not exist
	let I-1 be the inverse
	P (3 M) (b 13) (N, 13) (b) (b)
11 013	JAJ-1 = e
	T+T-1=1
	$\left(\mathbf{J}^{-1}=\mathbf{I}\right)$
203	TOTO TOTA PLAN TOTAL TOT
00/4	Since 1 4 7 1 102 cm 10 201
173	Since 1 & Z : invense not exist
the ho	The second secon
(1)(7,+) → 98 a subgroup
	for NiEZ
(1)	Associativity follows
	(M1 * M2) * M3 = (M1 + M2) + M3
15-1	$= \chi_1 + (\chi_2 + \chi_3)$



-	Mi	* (Ma	4	Ma	1
		1	017		113)

hence associativity follow

(i) Closure property exist

NI * M2 = (NI + M2) = 7

Jdentity exist

Let e be the identity

Nite=Ni

Nite=Ni

9 Inverse exists

Ni * I-1 = 0

Ni + I-1 = 0

I-1 = - MIEZ hunce invense exist

thus (Z, +) is soubgroup

(0, ·) 0 set of all rational numbers

Not a subgroup

Associativity follows

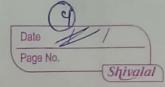
(2) Closure follows Mix M = M MED Mi, MOED

3 Identity exist

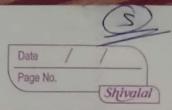
N * e = N

P = identity

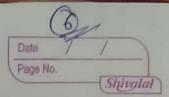
element



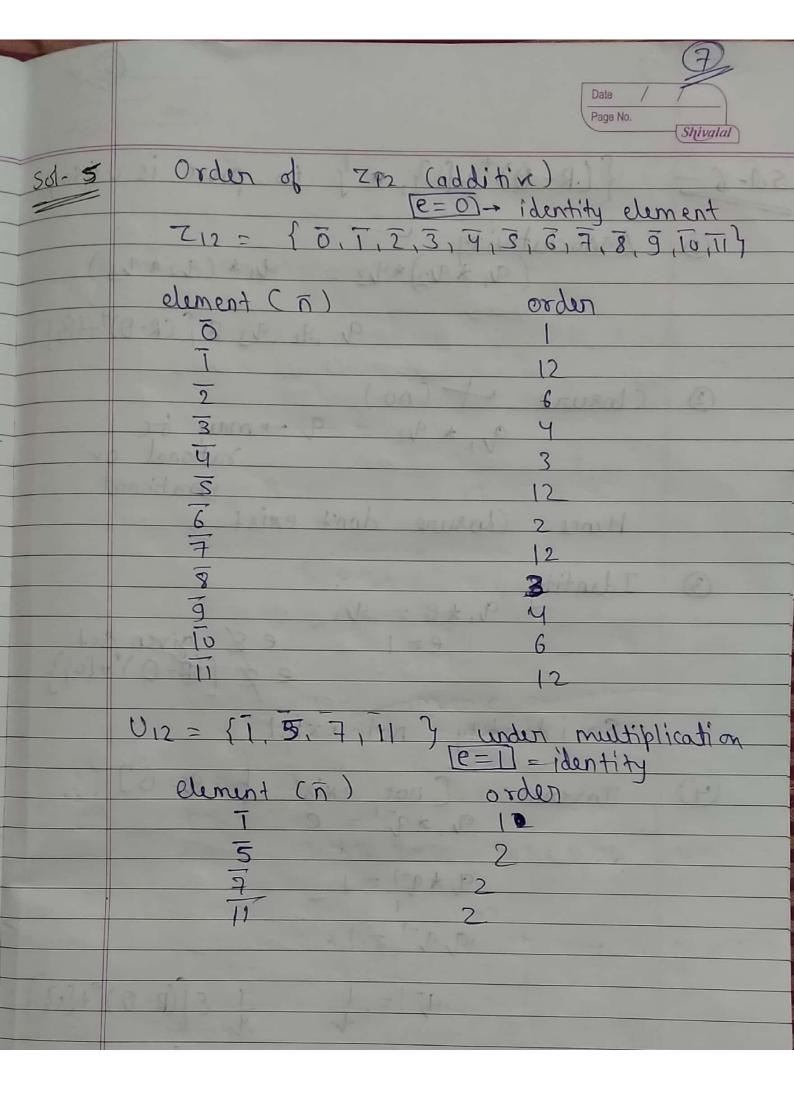
177	
(iv)	Inverse Not exint
	M.I-1= e N, I-1e E Q
1	N. I-1 = ([=1]
	$I^{-1} = I$
	S 3 Carlo N
	but in case of to inverse not exist
	Hence not a sub group
(2)	(0+,·) yes is a subgroup
	let ni E0+
	Associativity follows
	Lt = (M, * M2) * M3
	= (M, XML) XM3
	= (X1)x (N2 X N3)
	- M1 + (M2 + Ms)
	' ' (
	$(N_1 + N_2) + N_3 = N_1 + (N_2 + N_3)$
	Associativity followed
1	- Closure property exin
	M1 * M2 = M NE0+
	accollect states on A
	Identity exist
	N t e z M
16,1116	pél) nie Eot
10 -	Inverse exist
May 1	MAI-1 = P
made	7-1 = 1 F-1 E D + N
	Hence it a subgroup

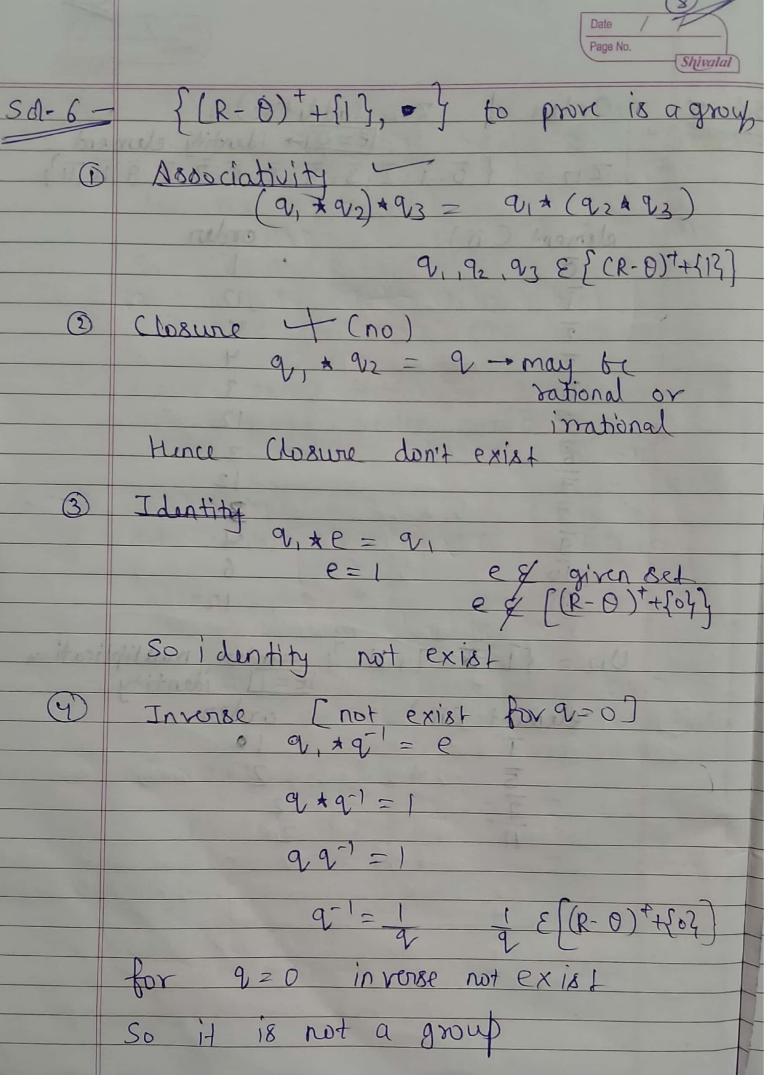


	Page No.	Shivalal
0	(0-,0) for 9i E0-	A Contract of the Contract of
0	Associativity exist	
3	Closure not follows $\hat{v}_1 \star \hat{q}_2 = +9$	20-
(3)	al tobes and a lo and servai	
9)	Identity not exist	
9	Inverse at the rot exist	
	2, = 1 1 5 8	
	So {Oijis not a group	
	(R-0, -) Associative exist (9,492) *93= 91 * (92**92)	9,9,938 R-8
②	Closure Not followed Q, * Q, = Q - may rot [e.q. (JIX JI) = 2 2 8 R-0 9 8 (R	te in(R-0)
3	Identity e=1 12 R-0 inverse exist So (R-D, .) not 9 gr	

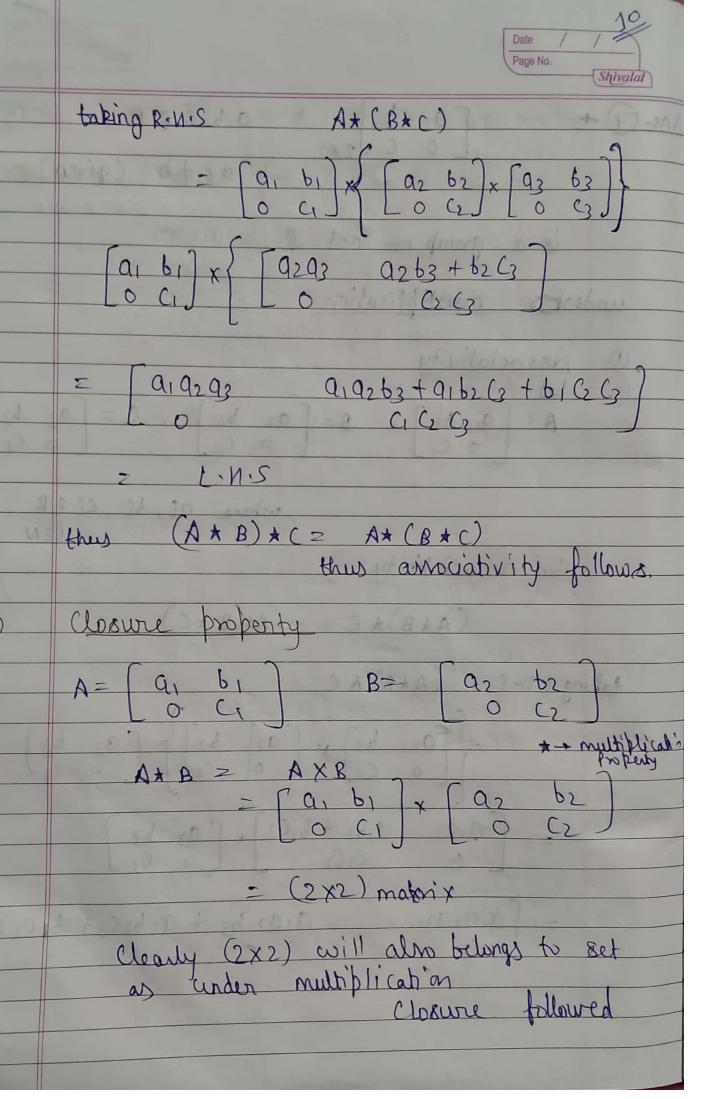


Der	Page No. Shivalal
50-9	given n>2 zn is not a group of (Ri) class for n>2
	ted n=3
-0 V	So Z3 = {0,1,2}
	inverse for 0 82 not exist in 73
	Hence proved that for n > 2 7 is not a group under multiplication of yesidue Clarres
	Now S= {1,2,3, n-1} is a set under multiplication moduler
	let n is not a prime
	Then n= pg [80me composite where p, q are some number
A Serie . Jo	: 1 < P & 9 < n-1
2 -9)01 % (8	Pq=0 [mod n] but 0 is not in H
	9t is a contradiction to our assumption. nis a prime num ter
1	· 118 a prime num ber Nence provid

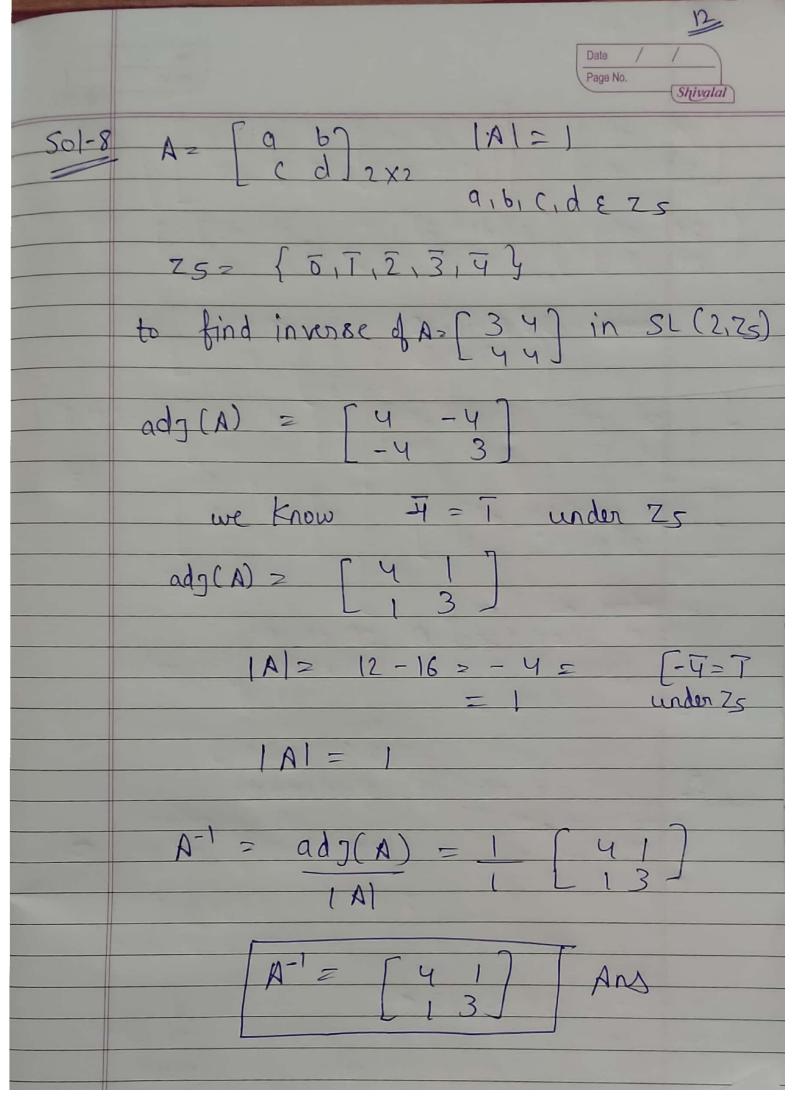


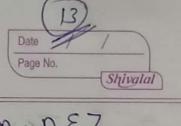


- CA	Date / /
	Page No. Shivalal
Ans- D-	<u> </u>
	$\begin{array}{c} L \circ C J_{2\times 2} \\ \circ c \neq \circ (given) \end{array}$
	00110011100
	18 a group or not?
und	wor multiplication
0	Associativity:
10	Det good good
	$A = \begin{bmatrix} a_1 & b_1 \\ 0 & C_1 \end{bmatrix}$ $B = \begin{bmatrix} a_2 & b_2 \\ 0 & C_2 \end{bmatrix}$ $C = \begin{bmatrix} a_3 & b_3 \\ 0 & C_3 \end{bmatrix}$
	241-3 -
	where ai, bi, Ci ER iEN
senally.	for associativity
	(A + B) + C = A + (B + C)
takır	9 C-N-S = (A * B) * C
de ridding	$= \begin{bmatrix} a_1 & b_1 \\ 0 & c_1 \end{bmatrix} \times \begin{bmatrix} a_2 & b_2 \\ 0 & c_2 \end{bmatrix} \begin{bmatrix} a_3 & b_3 \\ 0 & c_2 \end{bmatrix}$
	$\frac{1}{2}\left(\frac{1}{2}\right)\right)}{\frac{1}{2}\right)}\right)\right)}{\frac{1}{2}}}\right)}\right)}}\right)}}\right)}}\right)}}}\right)}}$
	$= \begin{bmatrix} a_1a_2 & a_1b_2 + b_1c_2 \\ 0 & c_1c_2 \end{bmatrix} \times \begin{bmatrix} a_3 & b_3 \\ 0 & c_3 \end{bmatrix}$
	Carl dalace
1-5	= [a, a, a, a
	es desilfation retail as
1,040	they are that is the same of t

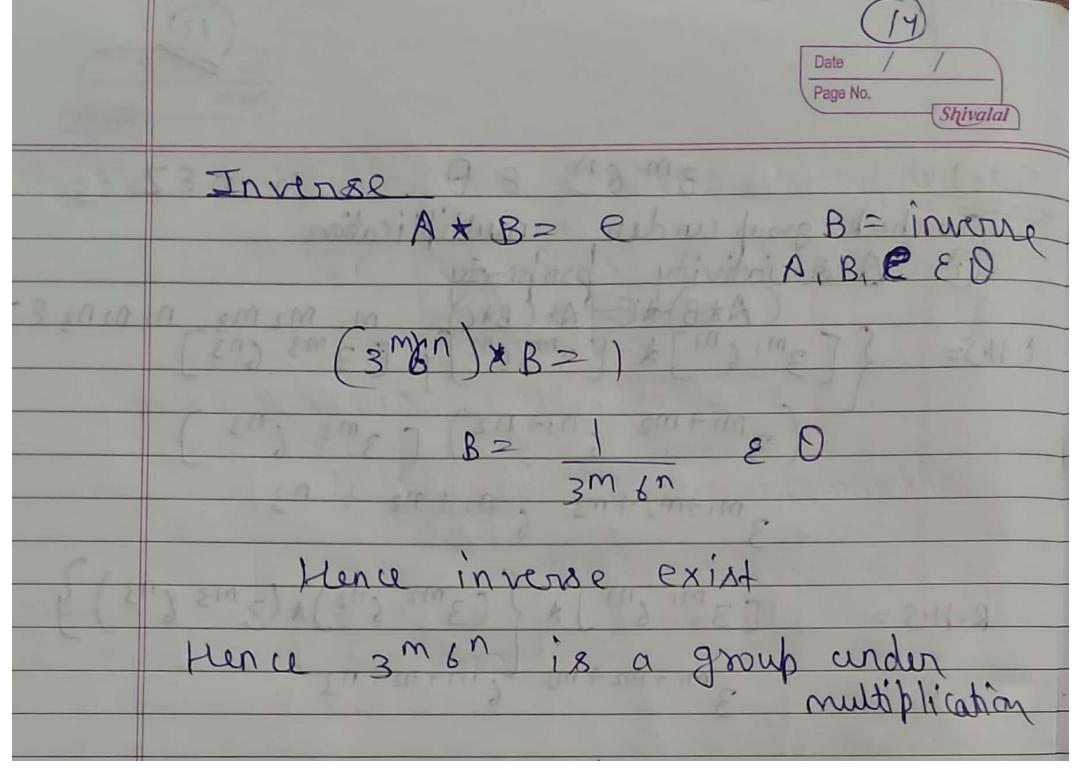


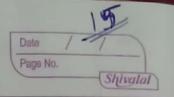
	Date / / Paga No. Shivalal
(3)	Identitu
10	$A = \{ab\}$ $a,b,C \in \mathbb{R}$
	o c January
	Let e be identity element
	$A \star e = e \star A = A$
	Cablus - Cabl
	$\begin{bmatrix} a & b \\ b \end{bmatrix} * e = \begin{bmatrix} a & b \\ 0 & c \end{bmatrix}$
Billion	$\begin{array}{c c} (ab)xe=(ab) \\ \hline \\ (c)xe=(ab) \\ \hline \end{array}$
	ac to Cgiven)
	6= 100
	10 1 2 X 2
The Co	e EO thus identity exist
Samuel D	of the or north 1 - (a)
9	Invense
THE PARTY	Inverse [a b] *B = e
Bythere	M 30 42 COM
Reco	B → invense e → identity
50	Man & Carrie
60	$\begin{bmatrix} a & b \\ o & C \end{bmatrix} \times B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
1160	0 () () () ()
Sa	IAI= QC = 0 :: inverse exist
, 1	INI SINVOISE CAIRT
	1
	thus it 18 a group.
7	





	Page No. Shivglal
501-9	3 ^m 6 ⁿ e D minez
70	check group under, multiplication
0	Associativity property
1 14 C	A & & & Ciativity property (A * B) * C= A * (B * C) M, M2 M3, N1 N2 N3 & ? [3m16 N1] * [3m26 N2) ? [3m36 N3] [3m36 N3]
t. M.S=	(3,16) * [3,26,2] 9 [3,13 6,13]
	(3m1+m2 6 n1+2n2) [3m3 6n3)
	3 m, +m2 + m3 6 m, + n2 + n3
	m. 0.7 (a.m. m. 1. m. 1. m.)
R.H.	5 = [3m16n1] * (3m26n2) * (3m36n3)
- 19	3 W1 + W5 + W3 (N1+ N2+ N]
1000000	1 thurs 3
	1. NS = R. N. S = 1
	Associativity followed
	I P E , S , I I P P A F () L T S I
2	Closure property
,	(M, M_1) $(-M_2)$
	$= \frac{3^{m_1} 6^{n_1}}{3^{m_2} 6^{n_2}} + \frac{3^{m_2} 6^{n_2}}{6^{n_1+n_2}} + \frac{3^{m_2} 6^{n_2}}{6^{n_1+n_2}} + \frac{3^{m_2} 6^{n_2}}{6^{n_1+n_2}} + \frac{3^{m_2} 6^{n_2}}{6^{n_2}} + \frac{3^{m_2} 6^$
	= 3 6 (n in) (no 1mm) c 7
	(n_1+n_2)
	hence closure also &oflowed
(3)	Identity was a second
	Identity Let e be the identity
	AXEZA
	e=1
	identity exist





Page No. Shivalal
ANS-10 (T) in $7s-\sqrt{5}$ under multiplier $7s-\sqrt{5}=\sqrt{7}$, $7\sqrt{3}$, $7\sqrt{3}$
0(4)22
2 O(i) in {1,-1, i,-i}
O(i) = Y $i = i$
$\frac{i^2 = -1}{i^3 = -i}$
$3 \int w^{15} = 1 \cdot w^{1} \cdot w^{2} = w^{14} y$
is a cyclic group
if (K, n) = 1 then ak will be a general.
[w, w ² , w ⁴ , w ⁷ , w ⁸ , w ¹¹ , w ¹³ , w ¹⁴] tare generators
$\frac{e.g}{(\omega^2)^2} = \omega^2 \qquad (\omega^2)^{10} = \omega^2$ $(\omega^2)^{11} = \omega^2$
$(\omega^2)^3 = \omega^8 \qquad (\omega^2)^{12} = \omega^9$ $(\omega^2)^{12} = \omega^9 \qquad (\omega^2)^{13} = \omega^{11}$
$(\omega^2)^3 = \omega^{13} \qquad (\omega^2)^{14} = \omega^{13}$ $(\omega^2)^6 = \omega^{12} \qquad (\omega^2)^{15} = 1$ $(\omega^2)^7 = \omega^{14}$
$(\omega^2)^9 = \omega$ $(\omega^2)^9 = \omega^2$

