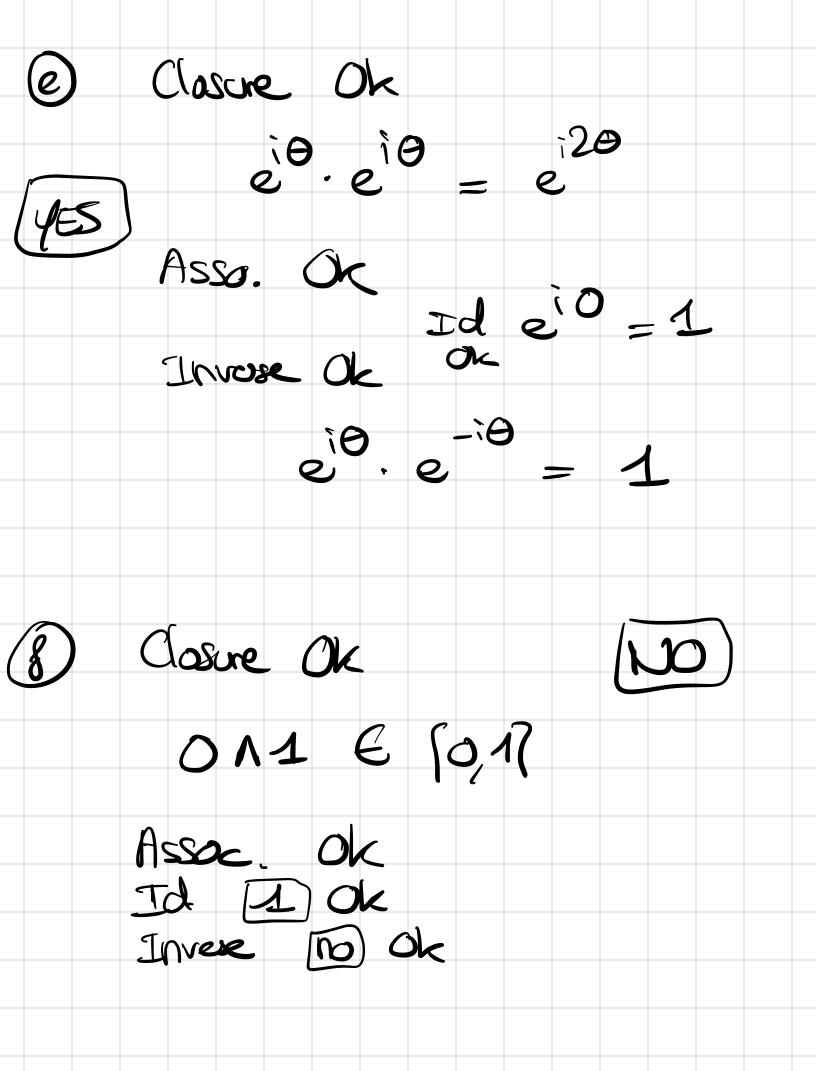
Problem 8.1

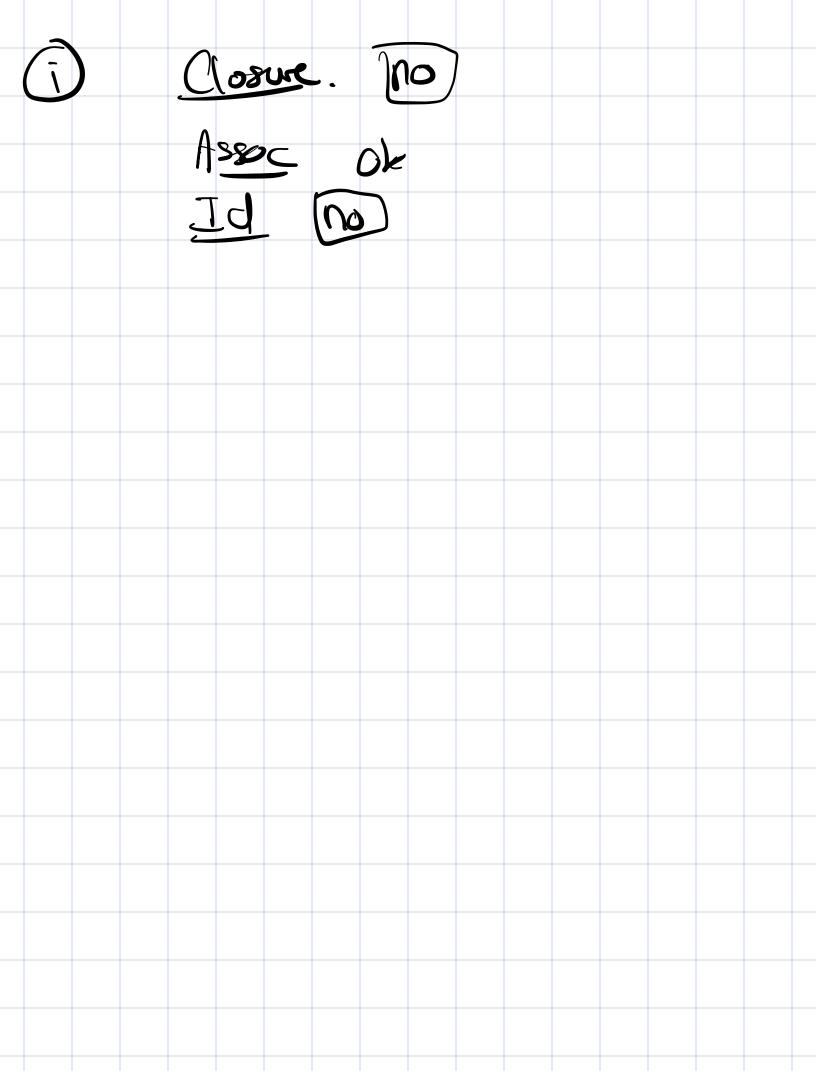
(a)
$$(2,\cdot)$$
 — no inverse

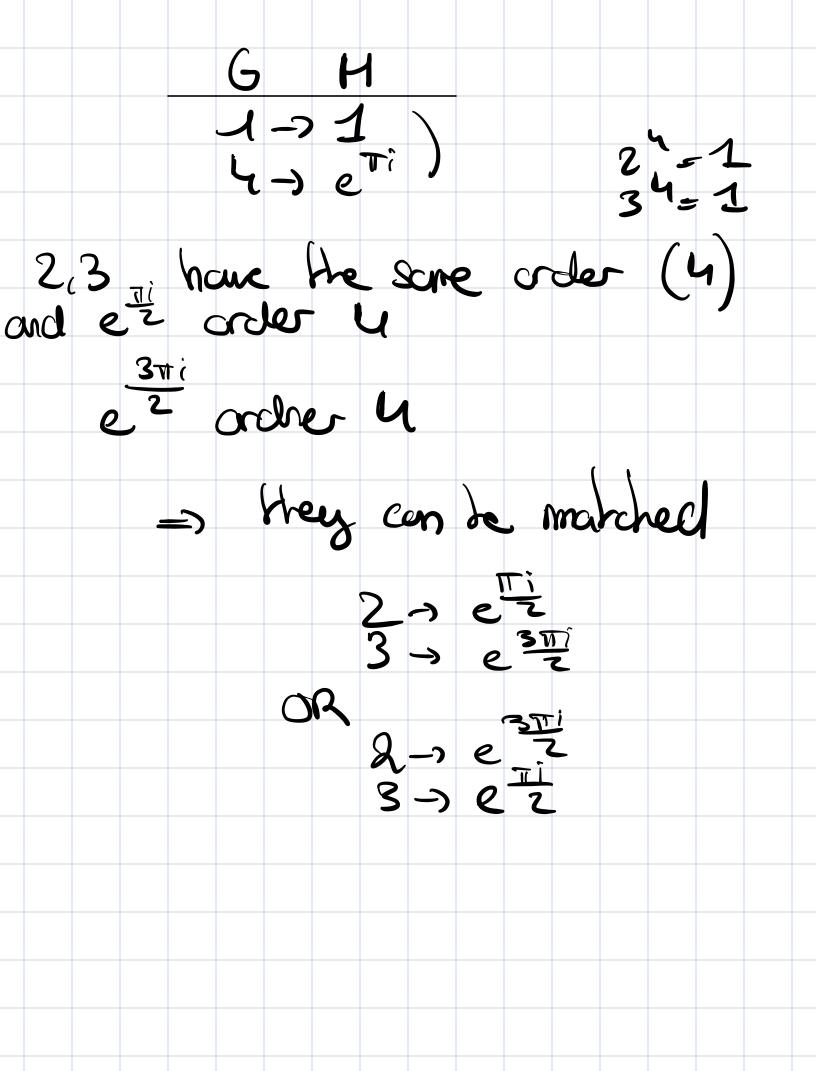
$$eg(R^n, \cdot) \rightarrow molusure$$

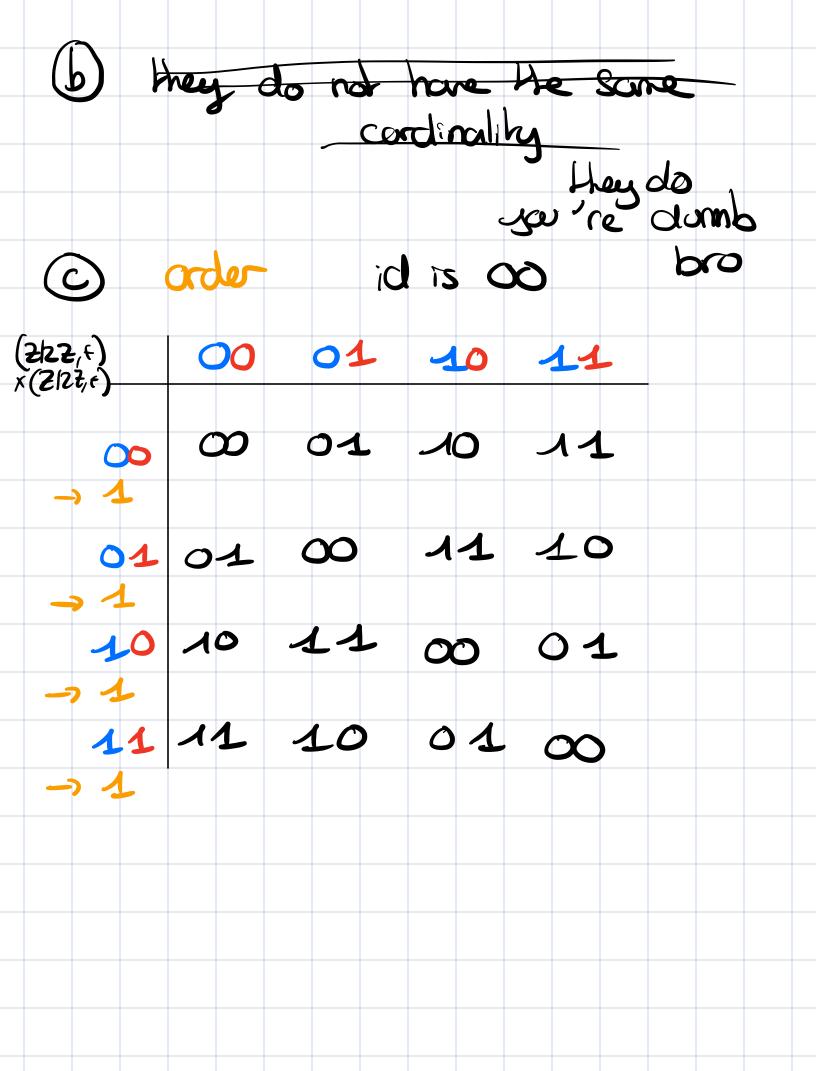
Associativity Ok Identy element 1 e ion Inverse devent (ole) rreine = 1 reneinoz = 1 $(r_1 \cdot r_2)$ = 1 $\frac{1}{2} \left[\frac{1}{2} \left(\Theta_{14} \Theta_{2} \right) \right] = 1$

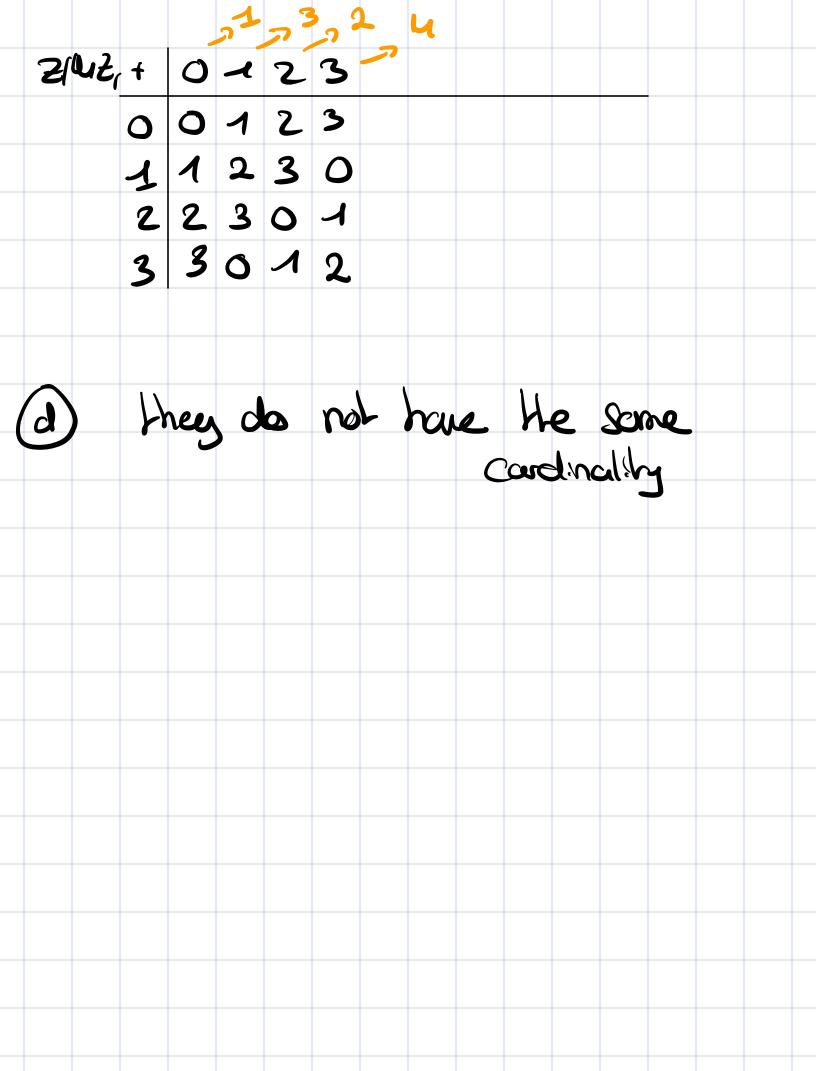


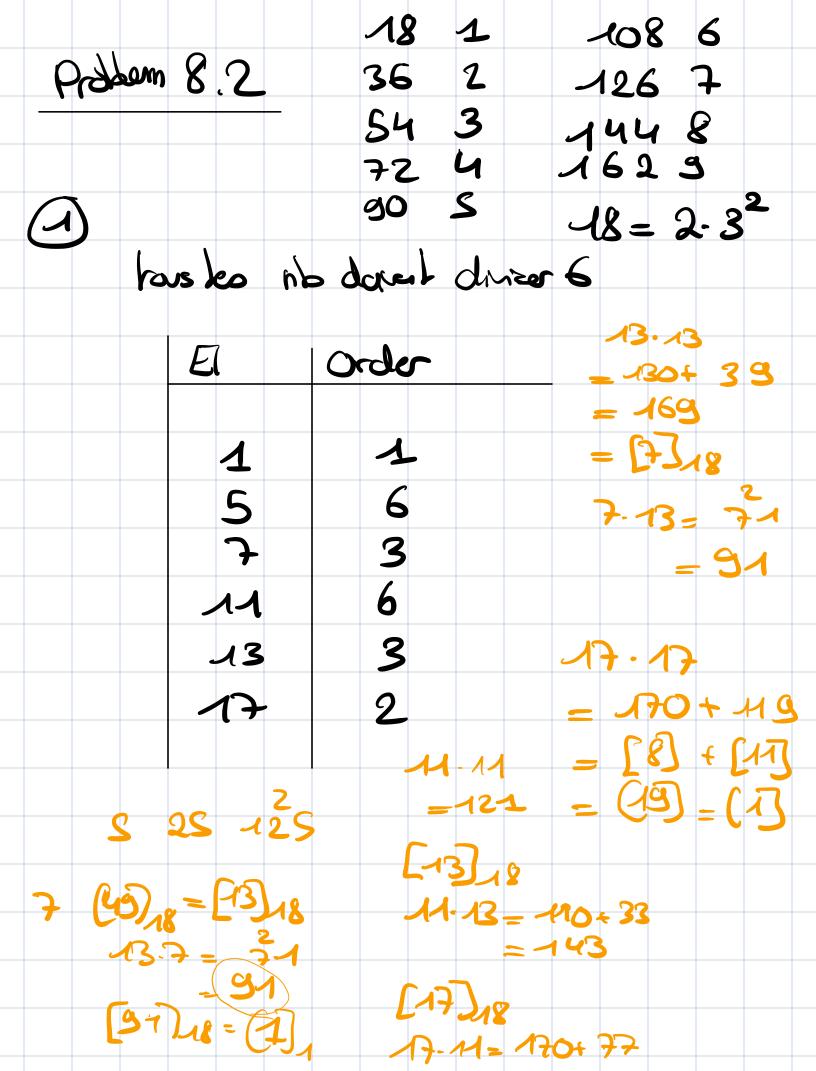
				ζς) 1,	.Z	3,	4				
)												
	(DSU	æ	. (0						
		As	300		(oh						
			d.									
							ا ول					
		الم	J.R	se.		F	<u>ط</u>)				
	\			3Une	•	0	<					
	<i></i>	_										
		1	1220	Σ.			<					
		3	Id	•	C	K						
		-	Lav	e CL		O	K					
		-										

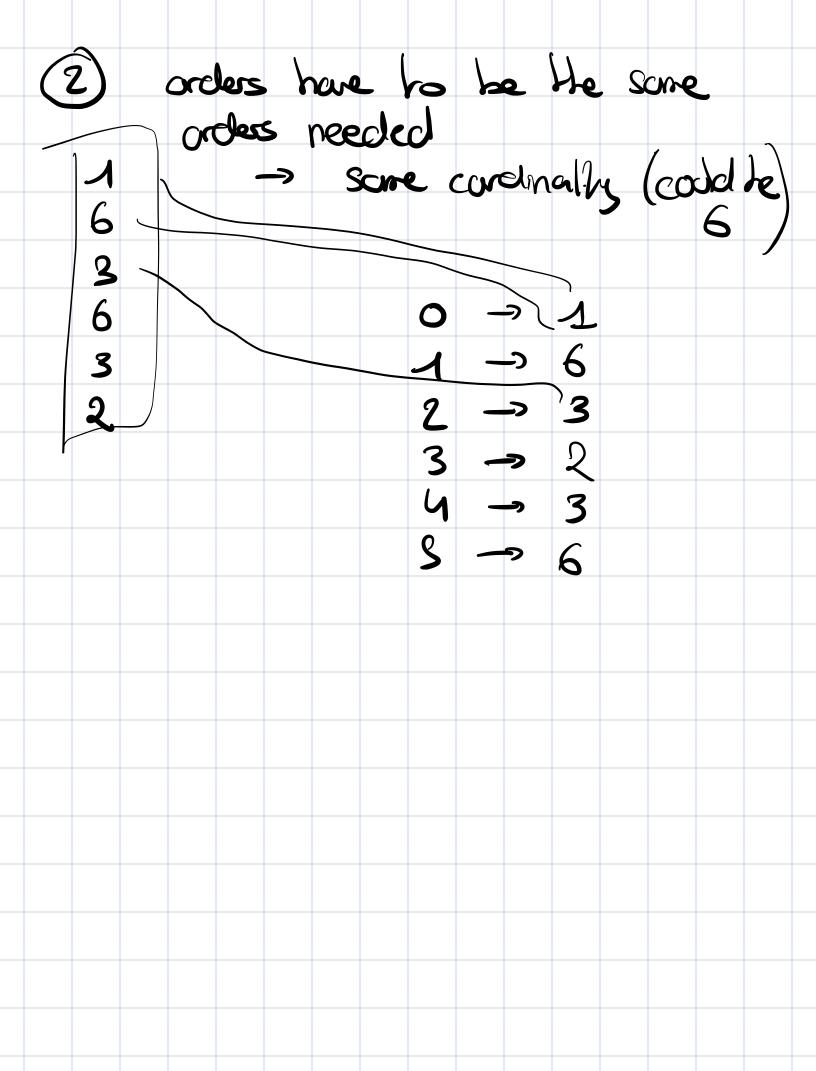












$$\Rightarrow \infty (\infty)^{-1} \sqrt{3}$$

3 2 and 13 are aprime

Lo
$$\phi(13) = 12$$

2 = 1 (13)

= un tray all lie dosses of 12, ob

red work!

4) $\phi(19) = 18$
 $x^{18} = 1 [19]$
 $x^{-19} = x [19]$
 $x = x = x [19]$

Problem 9.4 1) Yes, the key is independent of the mercage c = k+k mod m (other use if Sm) mue knew that He kez or the parter > ms)