

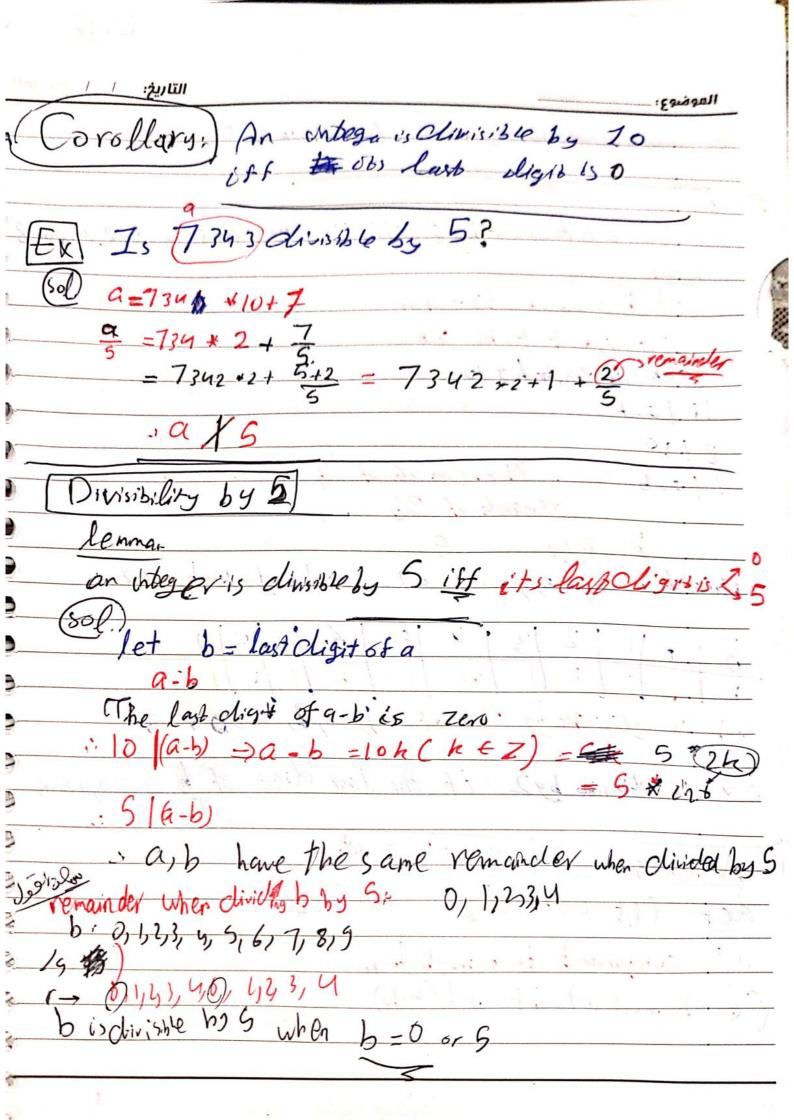
a = 96+r V=9-2 *b $9 = \left\lfloor \frac{a}{b} \right\rfloor$ $\frac{15}{4} = \frac{3}{4}$ الموضوع: 12 3 + 0 10 10 $\frac{-13}{4} = -4 + \frac{3}{4}$ 70 50 ·lemma: 50 by b (iff a, -92 is duisible by b [b/(a, -92)] 5 5 10 1 1) 9,02 have same remainder when divided by b 19 9 + 1 9 02 = 92 + 15 8 1 = acquer, osrs $\frac{\alpha_1 - \alpha_2}{b} = \frac{q_1 - q_2}{\text{orteger}}$ a is b recursively 261 كر ما دلندي متقل Give integer less thanb · b / (a1 - a2) 9 V 3 30ml 9 2) if b|a,-92 => a,-a2 = 96 . 9 glessione 6 gold win a Jub $a_1 = a_2 + q_b$ Let $a_2 = q_2 b + \gamma_2$ 0 0 region the certific the congrice a = (2 th) b + 1/2 of a2

(remainder of 9) bout; 12 1 = remarked 9 919 92 When de cliricled by b in the property of the policy

achber 0-16-1 التاريخ: 2 /a what possible remainder can a have when dividebbs 4? s possible remarkes a =2h+1 Crb + 1400 10 10 10 k even k adel N=2milint a = 4/m+2+1 = M7 L Ex. Given Uinteger a, b, C, d Isit the that two of Ithese four integers have same remainders divided by 3? 39+r, r € {0,1,23

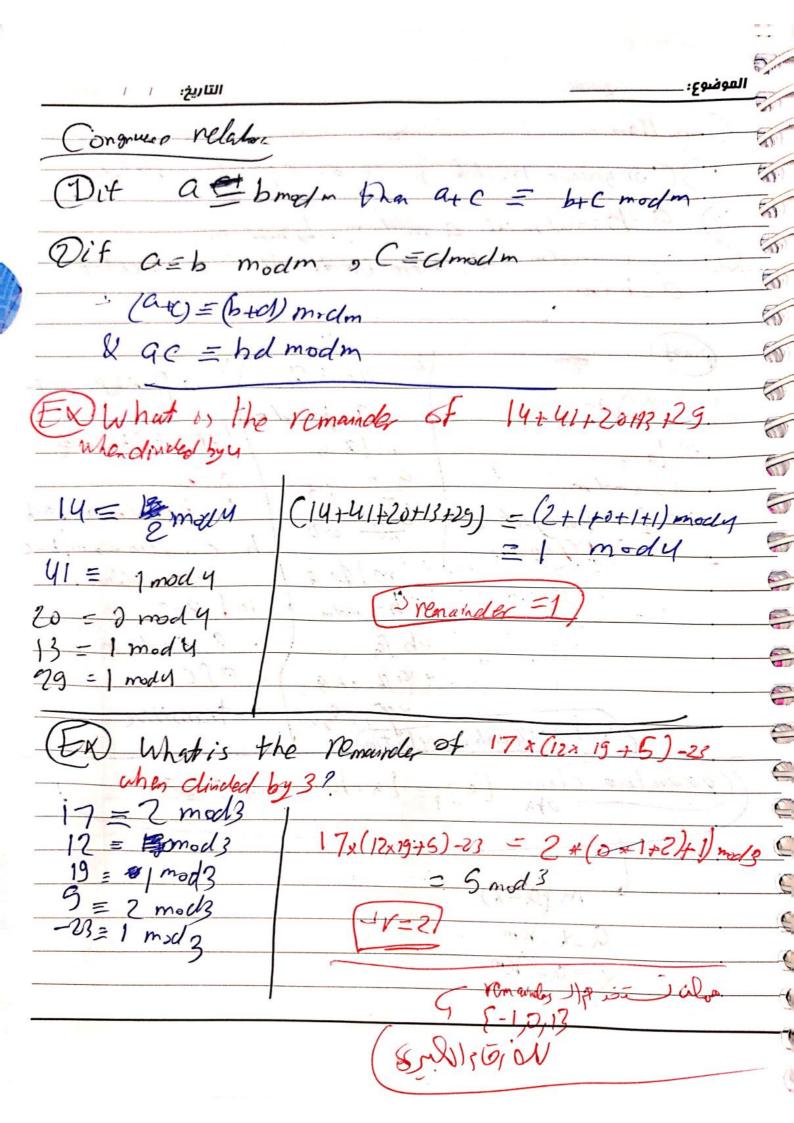
by Pilson hale rule $n = \left[\frac{4}{3} \right] = 2$ $n = \left[\frac{4}{3} \right] = 2$

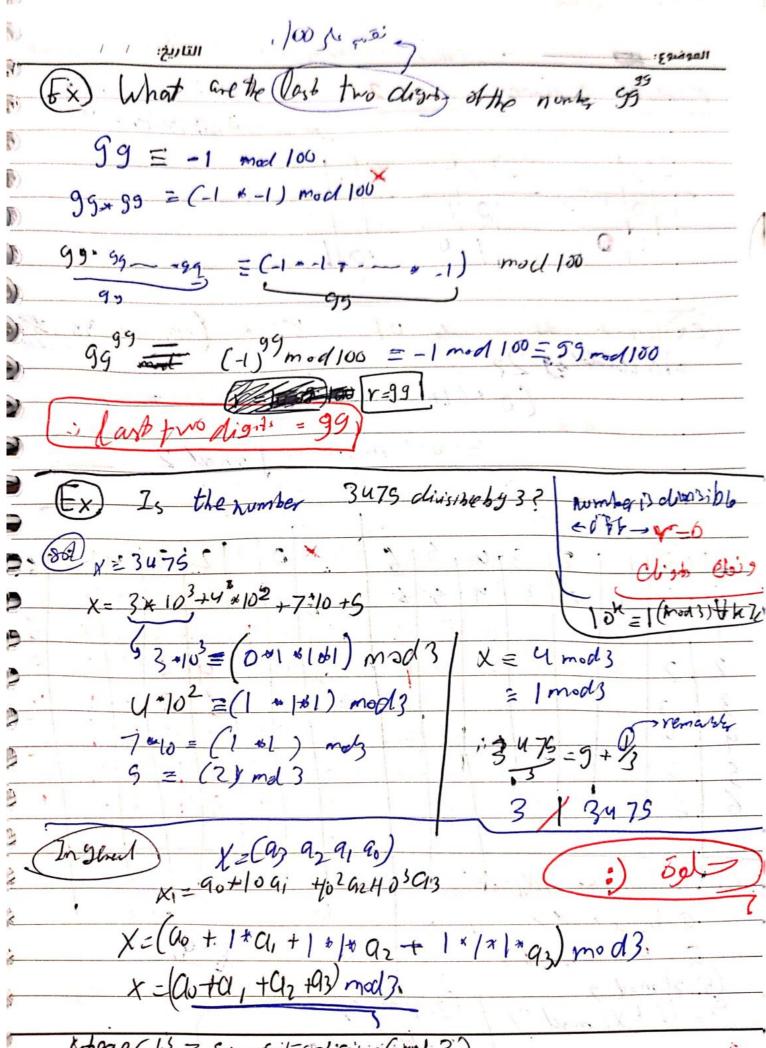
NOON OF التاريخ: many 3-digit non negative that have remainder 7 when divided by 101? assume that 2 dis. & number are also TO 9-101+7 = 1019+7 10 Ex- what is the remainder and quotient when divided by 10#? e divide a by 10 Then the remarder is the last digit of a n digits is thenome The quotient formed by all digits of a except the last sirt 6 into 0,660,59 0 exeminater as exus 0 Quetient 9= an-1 9, digit Filedisky 11 152



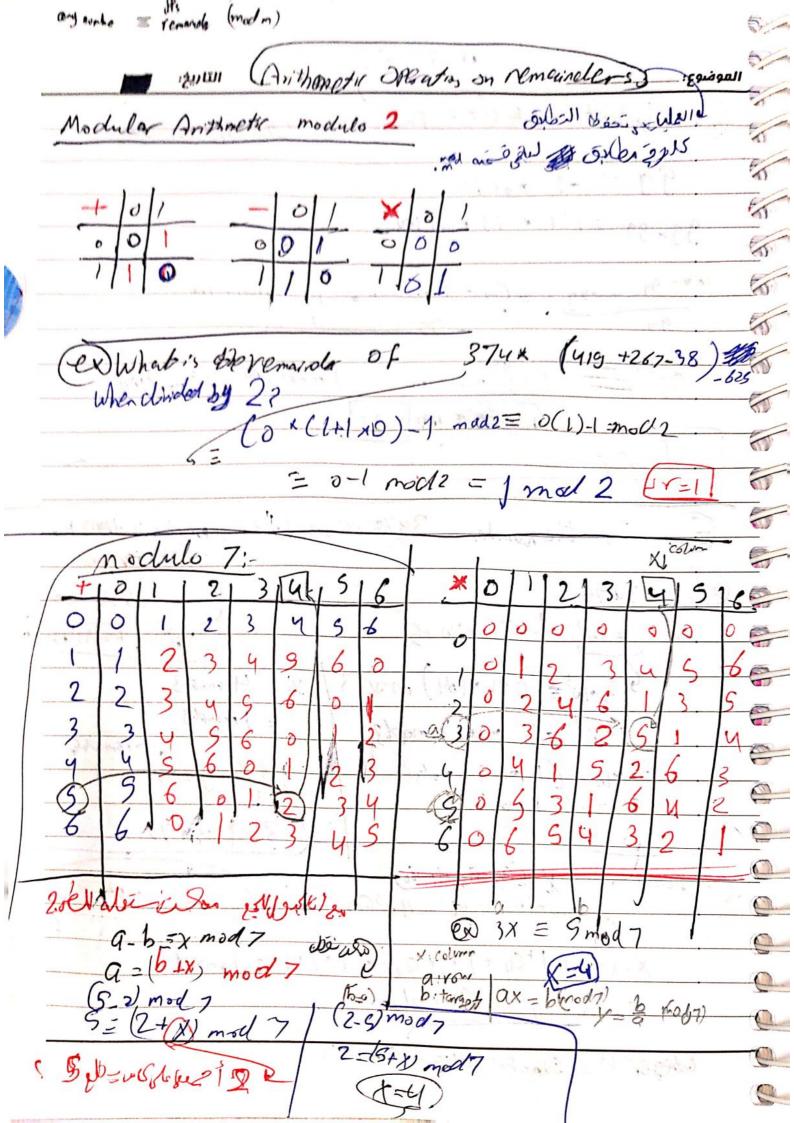
An integer assolusible by 10 off last digit is o Div. 64 2 int a is dissibly 2 off its last clight is 0,2,4,6008 last object of (a-b) is o (a-b) or day, be hy 10 21a-6 remainder: 0,1,0,1, ---,0,1 b=0, 2, 4, is a is divisible by 2 if the last digit of (Con gruence:) (4= h mod m) if ml (4-b)

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Endeger 13 = Sumosil-soligits (mod 3")



1 1 : Nimes & Com posite Zisnei the L Definition 1 Lan integer P71 is Prime if the only positione factor of P. T (1,P), otherwise > Pis Composite 5 5 En which is Prihe? ___ a 1 Theorem) if n & Z+, then there is a (inique) increasing 4 Seguence of primes: PisPz, Pm such that (n=PiPz...Pm) Propresent factorization of n Find the prime factorization of n por factionization = 50 1 25 ± and 100 = 2 8 2 8 5 8 5 25 fint / Theorem let n C 2 If neab then the prime factorization of n is the result of merging the prime factorization of a, b 7) If PB a Prime, Plan, and Pip Paper Pm is the PF of n then => P=Pi for some n APFJijcalo ~ (n may (Sol P dd Theorem is a Composite then I has a prime fector of In promaigno wife check let il in he root 11 & check de 205 assure (by contradiction) - let a > 5 , b > 5 = ab > n contradiction assure W.L.O. G that 95 VM 7 / 975 1 h 7507 a-sprime asm vbsm We are done +3 Some prime P 5 wh that \$ 19, 19/1

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וונונגל: ו		العوضوع:
Ex: Determine whather no	307 13 Prim	e or not?
		1 .
$ \sqrt{r} = \sqrt{307} = 17$		
Primes (5, 2, 3, 5)	7,11,13	F= 1 - C1
307 \$ 176 \ \frac{307}{7} \$\frac{7}{17} \$\frac{7}{17} \$\frac{7}{17} \$\frac{7}{17} \$\frac{7}{17}\$	1 1	+ , - 1
307	7 15 prime	
307 tint 307 7000		1 11 1 1 1 1
(The are)	,	
Theorem, There are infinite	ely many	mime.
Frost assume [by continuoliction] the	nt They are finit	e made of frimes
assume - Primes = P. B Pm		
let n= PiPz Pm comprite institution	53,0,	
n'= P. P. ~ Pm +1 ~ ou id	معالمة ورا	2 1
n' Comorcido illo a conto	1 8C!	0.100.0
n' Composi de : there earth of for	some d	Pi R. P. Pm
	4.1	(a)
Pi n-Pippin-pm	com?	my SI quest
Pi 12 -> Contradiction	> prime 201	1.1
your arumption is fall		
there exist so numberst	primes ;	(1) (1)

PF footskilds (25 8 julo 6) 30-6/2 sis Jan التاريخ: Uniqueress) proof ne Zt aunique 1 2 disort PF7 assume PF PUPPZ -- PK P, 92 - 9m n= PiPe .~ Pk = 2, 2 - 2m Dividing by Common elements (gives liter 19 (3) Prines) dois Pi Pi-Ph = 9,92 - 9 P' IR Hs read P'= 9 in forman J' E [1,4,-1] Pri 1 R Ns Wrong assumption . PF is unique

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