

POWER SET	Com 12 Com)
a set formed of all sincote	of a set S (as its elements)
	(as (TS elements)
S = &a, b, c }	
	7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
1-(s) = 80, 804, 864, 8	c3, &a, b3, &a, c3, &b, c3, &a, b, c3}
	161
$\phi \in \mathcal{P}(s)$ $ \mathcal{P}(s) =$	2
$S \in P(S)$	e e
Universal set U	s'= ExlxeV and x¢s3
	· Control and xx 53
complement of a set s' s° s	(Venn-euler diggram)
Innia is	
union or join	intersection or meet
AUB = & x x EA or x EB3	ANB= Ex xeA and xeB3
ΑυΑ - Α	$A \cap A = A$
AUV = V	Anu = A
4 ACB > AUB = B	C'FASB > ANB = A
AUB = BUA	Anb = Bna
	$An\phi = \phi$
A	
	$A \cap A' = \phi$
	•
LAWS OF ALGEBRA ON SET	S

associative laws

AUBUC = (AUB)UC

An(Bnc) = (AnB)nc

idempotent laws

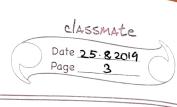
AUA = A

An A = A

commutative laws

AUB = BUA

ANB - BNA



distributive lows

An (Buc) = (AnB) u (Anc)

Au (Bnc) = (AuB) n (Auc)

(AuB) = A' n B'

(AnB) = A' u B'

A-(Buc) = (A-B) n (A-c)

A-(Bnc) = (A-B) u (A-c)

SYMMETRIC DIFFERENCE

A D B = (A-B) v (B-A)

= Exl(xeA and x&B) or (xEB and x &A)}

 $A \Delta A = \phi$ $A \Delta B = \phi \Rightarrow A = B$

CARTESIAN PRODUCT OF SETS

 $A \Delta \phi = A$

AXB = & (a, b) lacA and beB}

 $A = \{a, b, c\}$ $B = \{m, n\}$ $A \times B = \{(a, m), (a, n), (b, m), (b, n), (c, m), (c, n)\}$

1A×B) = |AIx|B|

AXB & BXA

THE INCLUSION-EXCLUSION	PRINCIPLE
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let A, Az, ... An be n finite sets

... + (-1)ⁿ⁺¹ | An A

-land - land - land

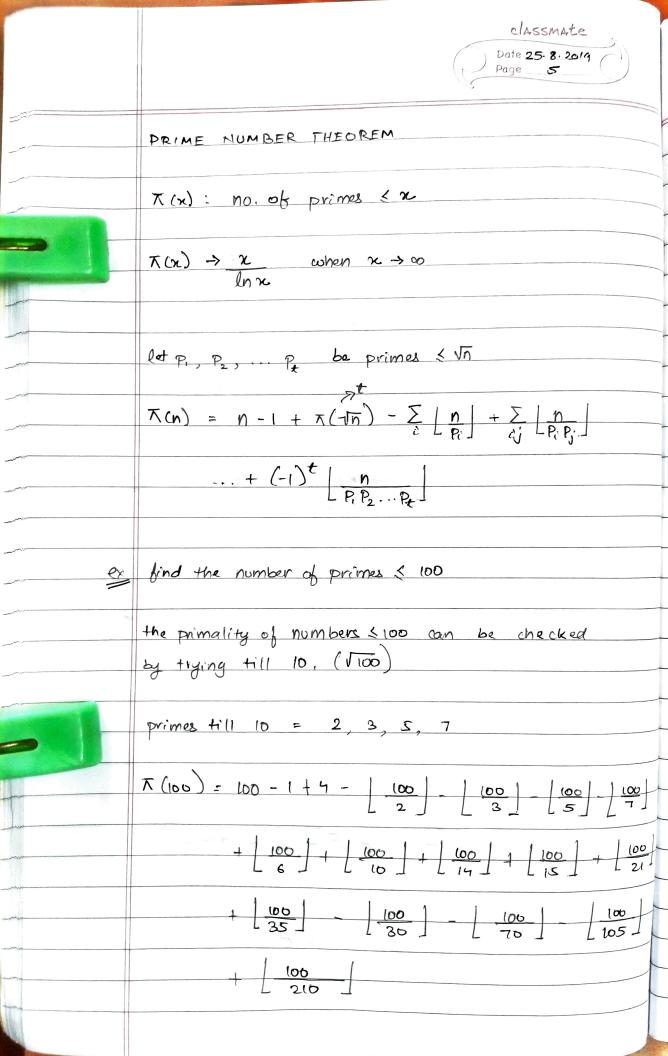
+ IAMBN C

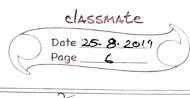
ex find the number of the into \$ 2076 and divisibly by neither 4 or 5.

A = fx | x < 2076 and divisible by 4 }
B = {x | x < 2076 and divisible by 5}

1AUB1 = 1A1 + 1B1 - 1AAB1

ints NOT divisible by 4 or 5 = 2076 -831





$$\phi$$