Discrete Structures

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PG-43. Jaynan Madi. Tutorial 3

 $a. (3x-2)^{10}$

of It is of the John (ax +b)

hence

Lonterm = C3 (ax) n-3 b3

 $= {}^{10}C_3(3\pi)^7(-2)^3$

 $= \frac{3}{10 \times 9 \times 8^{4}} (3^{7}) (-(8)) \times 7$

 $=-120(37)(8)x^{7}$

on - 10C3(37)(8) x2

b. (x2-2y2)6

it is of the form $(x^q - by)^n$

hence, jam= "(2 (22) n-2 (-Dy)2

hence, n-9=3 le 9=3

thus, n=6 & 2=3

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i.e. the term is

6 (3 (x2)3 (2y)3

- 6C3 (x6) (-8)(y13

= -8.6C3 (x6y3)

thus the coefficient of no y3 is -8 63.

 $S = \{1, 2, 3, 4, 5, 6\}$

The state of the s		-			A			South of
6	R		2	3	4	5	6	
							nv	Y
•	1	×	×	*	×	×	×	
	Q = ()	25		1500	(8)(f;	10	
	2		×		>		×	
		0 1)		S (S)	(TS)	15.08	
	3			×			×	
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		e Ca	4 -	P		2401	0	le
	5					×		
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	(5) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4
	graphical repr
3.	R={2+3, 2+2}: X E {0,1,2,3,4,5}
3.63	Hus, $R = \{(3, 2), (4, 3), (5, 4), (6, 5), (7, 6), (8, 7)\}$
2)	hence, Domain = {3,4,5,6,7,8} Range = {2,3,4,5,6,7}
	a not reflerine, not symmetric, transitive b. reflerive, symmetric, transitive.

C. reflerive, symmetrie a transitive.

5. N= {4,5,63, Y= {a,b,c}, Z= {1,m,n}

 $R_1 = \{(4,a), (4,b), (5,c), (6,a), (6,c)\}$ $R_2 = \{(4,a), (a,n), (b,1), (b,m), (c,1), (c,m), (c,n), (c,n)$

 $R_1 \circ R_2 = \{(4,1), (4,n), (4,n), (4,n), (5,1), (5,n), (5,n), (6,n), (6,n), (6,n)\}$

(2,3),(3,2),(8,3),(9,8)=9 with (2,0),(9,8)=9 with (2,0),(9,8)=9

P, = { (a,4), (b,4), (c,5), (a,6), (e,6)}

 $ROR^{-1} = \{(4,4),(4,6),(4,6),(5,5),(5,6),(5,6),(6,6),(6,6),(6,5)\}$

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6. We know that consecutives numbers, (such as 3,4), have no common jactors,

thus, let our pigeonholes be:

 $\{1,2,3,\{3,4\},\ldots,\{2n-1,2n\}$

here, our proposes are the n+1 numbers we are choosing from the given set,

by pricingle two of our n+1 numbers will be in the same proponhole and since the sets have pairs of consecutive numbers, the progeons will be a pair of consecutive numbers, i-e well have a pair with no common faithers.

7. here, we have,

K= S & r= 6. N= ?.

we know that TN/57 = 6.

we can find the smallest value of

Nusing the equation N=k(2-1) +1.

substituting ker, we get

N=5(s)+1=26 hence, there should

be atleast 26 students