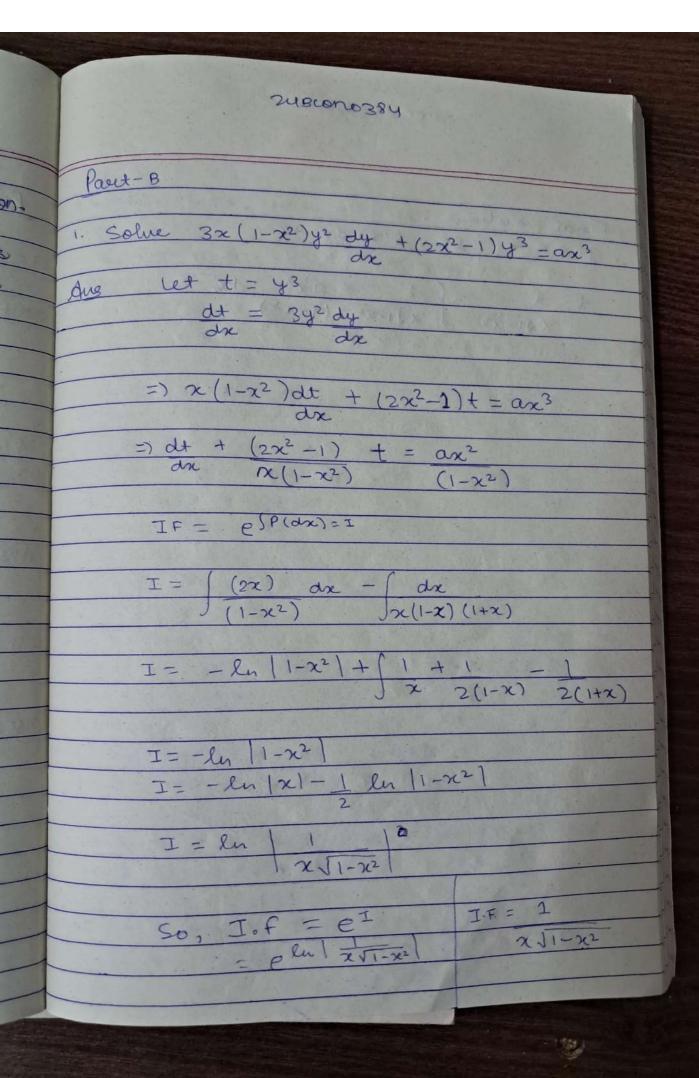
Tutorial Sheet-5 24BCON0384

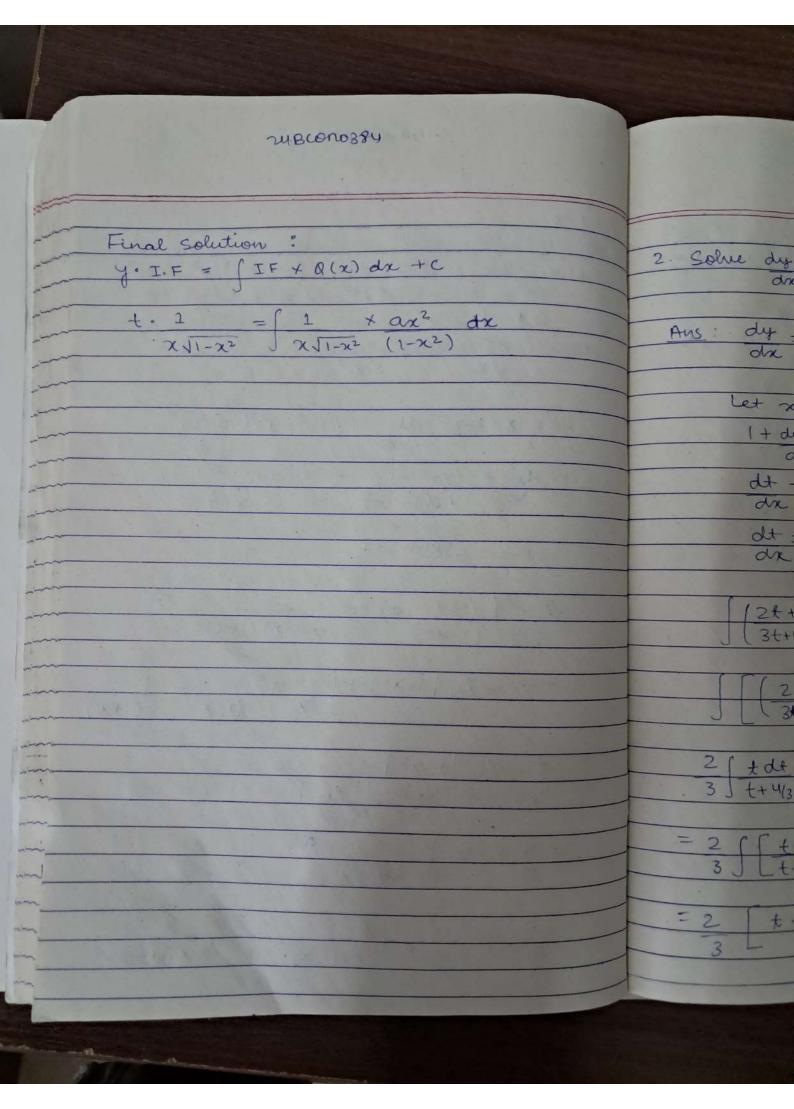
Part - A
Tout - A la tandalista and a supplied to the
Q1. Define degree and order of differential
Aus: · Dedos : Ti
Ans: Order > It is the highest deciwative in a equation.
a Equation.
· Degeree > Highest power of the highest - Derdon desirative. (if Polynomial)
Desdoor desiration (it believes ?)
(if toughornal)
O2. What is the Standard four of linear differential equation.
differential equation,
Ans: first ouder: $dy \neq p(x) y = \alpha(x)$
dre
03. Define exact differential equation and also
discuss the condition jou exactness.
Aus:-let the differential equation be of the
toum
form $m(x,y)dx + N(x,y)dy = 0$
toum
form $m(x,y)dx + N(x,y)dy = 0 -0$ equ is said to be an exact diff. eqn y
form $m(x,y)dx + N(x,y)dy = 0$

	Paret-
oy. Define nomogeneous differential equation.	
du : A homogeneous differential equation is	1. Sol
a differential equation in which all	
teins involve the dependent variable	Aug
or its desiratives, and there is no	-
independent teems.	
The state of the s	
$\frac{dy}{dx} = f\left(\frac{y}{x}\right)$	
and (2)	
05. Solve du = Sin2 (x-y+1)	
05. Solve dy = Sin2 (x-y+1)	
let x-y+1=t	
1-dy=dt	
ax dx	7. 16. 1
$\frac{1-dt}{dx}=\sin^2(t)$	
A STANDARD OF THE CASE OF THE	
$\frac{dt = \cos^2(t)}{dt}$	
(2 262)	
$\int \sec^2(t) dt = \int dx$	
$-\frac{1}{2} + c = \chi + c$	
~ +un(k) - x+c	
$\frac{1}{\tan(x-y+1)} = x+c \text{ons}$	
THE PARTY OF THE P	
	11 12 12 1

I

I





2. Solve dy =
$$x+y+1$$

dx $2x+2y+3$

Ans:
$$dy = x+y+1$$

$$dx = 2(x+y)+3$$

$$\frac{2\int t dt + 3\int dt}{3\int t + 4/3} = 20+0$$

ruscono384

$= 2 \left[x + y - 4 \right] \ln \left[2 + y + 4 \right] + \ln \left[3x + 3y + 4 \right]$ $= 3x + 3y + 4 = Ce^{3}(x - 24) $ $= 3x + 3y + 4 = Ce^{3}(x - 24) $ $= 3x + 3y + 4 = Ce^{3}(x - 24) $	Part-c
$\frac{a_3 \text{ Solve } (1+y^2) + (x - e^{\tan^{-1}y}) dy}{dx} = 0$ $= \frac{dx}{dx}$ Ans $\frac{dy}{dx} = (x - e^{-\tan^{-1}(y)}) = -dx(1+y^2)$	Soln Let a
$= dy = e^{-t\alpha u^{-1}(y)} - \chi$ $dse = 1 + y^2$	-dt dx dt dt
$= \frac{dx}{dy} + \left(\frac{1}{1+y^2}\right) = \frac{e^{-tan^{-1}(y)}}{1+y^2}$ $= I \cdot F = \frac{e^{\int P(y) dy}}{1+y^2}$	=) +2dt dn (et
= I.F= estan-14) Final Solution	$\frac{-1}{t^2}$
ocetaning = lantiyoto	dre du .
$2(e^{+cun^{-1}y} = \int e^{-+cun^{-1}(y)} \times e^{+cun^{-1}(y)} dy \neq 0$ $1+y^{2}$ $=) 2(e^{+cun^{-1}(y)} = +cun^{-1}(y) + 0 $ $= +cun^{-1}(y) + 0 $ $= +cun^{-1}(y) + 0 $	- COVE

C2. Solve (3x²y4+2xy) dx.+ (2x³y³-x²)dy=0
- ON
$M = 3x^2y^4 + 2xy$, $N = 2x^3y^3 - x^2$
$\frac{3N = 12x^2y^3 + 2x}{3y}, \frac{3N}{3x} = 6x^2y^3 - 2x$
st st
The second secon
- Let solve by multiplying eq D by [xnyx]
$M' = 3x^{n+2}y^{k+4} + 2x^{n+1}y^{k+1}$
2011 - 2(K) 11 - 12+2 K+3 , 2(K+1) - 12+1 KK
2M1 = 3(k+4) 2n+2 yk+3 + 2(k+1) xn+1 yk
$N' = 2x^{n+3}y^{k+3} - x^{n+2}y^{k}$
ON' = 2(n+3) xn+2 yk+3 - (n+2) xn+1 yk
22
To make this egh reducible to exact it holds:
0M1 = 9N1
DY DX
3(k+4) 2n+2 yk+3 +2 (k+1) 2n+1 yk
= 2(n+3) xn+2 yk+3 - (n+2) xn+1 yk
Dia comp.
On comparing Line & RoHos we get 2 equs
-3(k+4)=2(h+3)
2(k+1) = -(n+2)

= 3k - 2r = 2n - 3k = 2k + 2 = 2k + n

211-3k-

2=0

So, It = -

=) $(3x^2y^2 +$ =) $M^1 = 3$

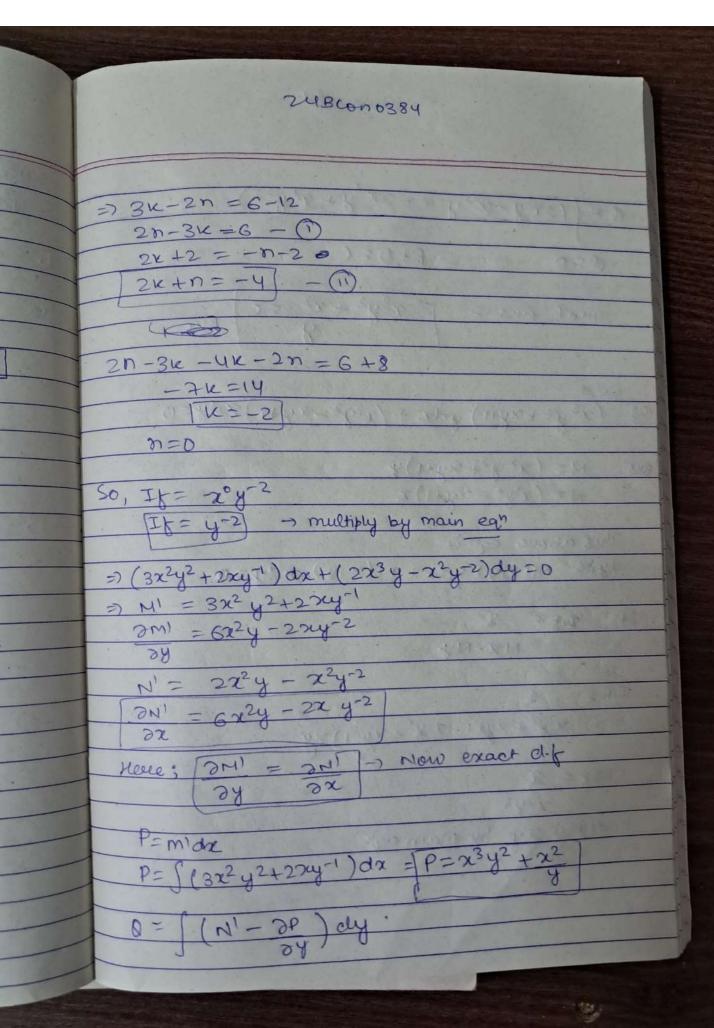
9W1 .

N' =

Here; [3

P= 5 (3)

0= [



0-11034-224	$-2-2x^3y+2^2y^{-2}$	
0= (20)	The state of the s	=7.
N=D	P+0=C	
070	THE PROPERTY OF THE PARTY OF TH	
Final one =	- 23y2 + x2 = c Ang	
3/1/000	y me	- 10
	The state of the s	
Solve		A
03 (x2 y2 + xy+1) yo	dx + (22y2-xy+1) xdy=0	
Ans M= (x2 y2+ x4	4+1)4	
$N = (\chi^2 y^2 - \chi y)$		-
	SAFETY CANDING TO BE BEEN THE	1 4
This above eqn is		
type M(x,y) yo	ax + N(xiy) ndy 20	
T1	ALCOHOL STATE OF THE STATE OF T	
Its I.b= 1		
Mx-Ny	*	
I.f = 1		
	NEW	
	22y2 + xyx(1) xyy	
THE 2	THE REAL PROPERTY OF THE PARTY	
x2y2	1 December 1 Contract of the State of the St	
multiply I of by 1	rain eq"	
		-
		-

2 2 x2y2

JM'

D =

P=

P=

Final

xy+l

ny

