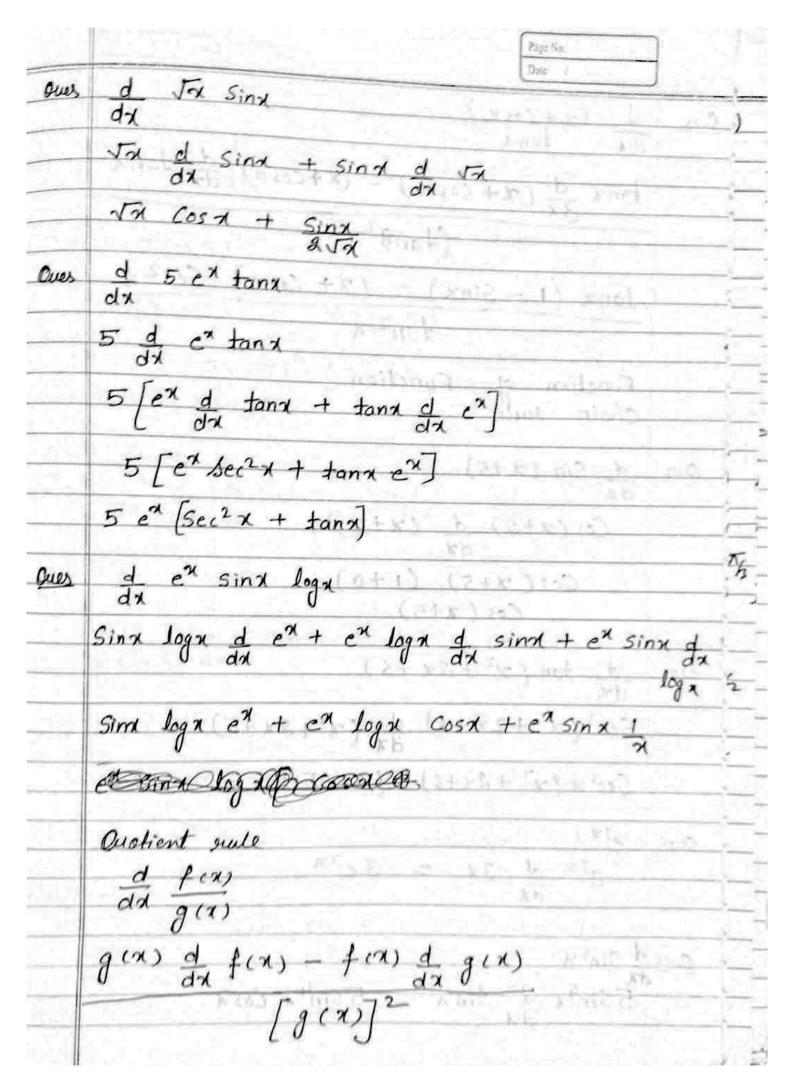
	Differentiation
	formula
IJ	$\frac{d}{dx}(x^n) = nx^{n-1}$
9	d ex = ex
3	$\frac{d}{dx} a^{x} = a^{x} \log a$
4)	d Sinx = cos x
5>	d Cosn Sind
6>	d tone sec2x
7	d Cota = - cosec2x
8>	dx Sect = Secx. tonx
9>	d coseca = - coseca cota
10	da loga = 1
ues	$\frac{d}{dx}$ & Sinx = 2 d Sinx = 2 cos x

	Liber 1	_
	Sum sule	
		1
	$\frac{d}{dx}\left(f(x)+g(x)\right)$	1
	$\frac{d}{dx} f(x) + \frac{d}{dx} g(x)$	
	dx dx	7
	The State of the S	-
us	Ex d (Sinx + Cosx)	-
		1
	d Sinx + d Cosa	1
	dd dd langer - langer	
	Cosa - Sina	+
		1
ues	d (2 cosd - 3 sind + 4 tann + 7c4 + 3va)	+
	02	Acres 100
	2 d cosx - 3 d sinx + 4 d tong + = 1 d = 1	-
	2 d cosx - 3 d sinx + 4 d fanx + 7 d ex + 3 d	Ja
	2 d cosx - 3 d sinx + 4 d fanx + 7 d ex + 3 d	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3$ $\frac{d}{dx} \frac{\sin x}{x} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$ $\frac{d}{dx} \frac{\sin x}{x} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3$ $\frac{d}{dx} \frac{\sin x}{x} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$ $\frac{d}{dx} \frac{\sin x}{x} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3$ $\frac{d}{2} \sqrt{3} = x^{1/2} = \frac{1}{2} x^{1/2^{-1}} = \frac{1}{2} x^{-1/2} = 1$	Ja
	$\frac{2}{dx} \frac{d}{dx} = \frac{3}{dx} \frac{d}{dx} = \frac{3}{dx} + \frac{3}{dx} \frac{d}{dx} = \frac{3}{dx} + \frac{3}{dx} = \frac{4}{3} + \frac{3}{3} = \frac{4}{3} + \frac{4}{3} = \frac{4}{3} + \frac$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3 \frac{2\sqrt{2}}{2\sqrt{2}}$ $\frac{d}{dx} \sqrt{3} = x^{1/2} = \frac{1}{2} x^{1/2^{-1}} = \frac{1}{2} x^{-1/2} = 1$ $\frac{d}{dx} \sqrt{3} = x^{1/2} = \frac{1}{2} x^{1/2^{-1}} = \frac{1}{2} x^{1/2} = 1$ $\sqrt{3} = \frac{1}{2\sqrt{3}}$ $\sqrt{3} = \frac{1}{2\sqrt{3}}$	Ja
	$\frac{2}{dx} \frac{d}{dx} = \frac{3}{dx} \frac{d}{dx} = \frac{3}{dx} + \frac{3}{dx} \frac{d}{dx} = \frac{3}{dx} + \frac{3}{dx} = \frac{3}{dx} + \frac{3}{dx} = \frac{3}{2} \frac{3}{2} = \frac{1}{2} = \frac$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3$ $\frac{d}{dx} \sqrt{3} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$ $\frac{d}{dx} \sqrt{3} = \frac{1}{2} \sqrt{3}$ $\sqrt{3} = \frac{1}{2} \sqrt{3}$ $\frac{d}{dx} \sqrt{3} = \frac{1}{2} \sqrt{3}$	Ja
	$\frac{2}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2} x + 7 e^{x} + 3 \frac{2\sqrt{2}}{2\sqrt{2}}$ $\frac{d}{dx} \sqrt{3} = x^{1/2} = \frac{1}{2} x^{1/2^{-1}} = \frac{1}{2} x^{-1/2} = 1$ $\frac{d}{dx} \sqrt{3} = x^{1/2} = \frac{1}{2} x^{1/2^{-1}} = \frac{1}{2} x^{1/2} = 1$ $\sqrt{3} = \frac{1}{2\sqrt{3}}$ $\sqrt{3} = \frac{1}{2\sqrt{3}}$	Ja
	$\frac{\partial}{\partial x} \frac{\partial}{\partial x} \frac{\cos x - 3}{\partial x} \frac{\partial}{\partial x} \frac{\sin x + 4}{\partial x} \frac{\partial}{\partial x} \frac{\cot x + 3}{\partial x} \frac{\partial}{\partial x}$ $-2 \sin x - 3 \cos x + 4 \sec^2 x + 7 e^{x/4} + 3$ $\frac{\partial}{\partial x} \sqrt{3} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$ $\frac{\partial}{\partial x} \sqrt{3} = \frac{1}{2} \sqrt{3}$	Ja
	$\frac{\partial}{\partial x} \frac{\partial}{\partial x} \frac{\cos x - 3}{\partial x} \frac{\partial}{\partial x} \frac{\sin x + 4}{\partial x} \frac{\partial}{\partial x} \frac{\cot x + 3}{\partial x} \frac{\partial}{\partial x}$ $-2 \sin x - 3 \cos x + 4 \sec^2 x + 7 e^{x/4} + 3$ $\frac{\partial}{\partial x} \sqrt{3} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$ $\frac{\partial}{\partial x} \sqrt{3} = \frac{1}{2} \sqrt{3}$	Ja
	$\frac{d}{dx} \frac{d}{dx} \frac{\cos x - 3}{dx} \frac{d}{dx} \frac{\sin x + 4}{dx} \frac{d}{dx} \frac{\tan x + 7}{dx} \frac{d}{dx} \frac{e^{x} + 3}{dx} \frac{d}{dx}$ $-2 \sin x - 3 \cos x + 4 \sec^{2}x + 7 e^{x} + 3$ $\frac{d}{dx} \frac{\sin x}{x} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{-1/2} = 1$ $\frac{d}{dx} \frac{1}{x} = \frac{1}{2} x^{1/2}$ $\sqrt{x} = \frac{1}{2} \sqrt{x}$ $\frac{d}{dx} \frac{1}{x} = \frac{-1}{x^{2}}$ $\frac{d}{dx} \frac{1}{x^{2}} = \frac{-1}{x^{2}}$ $\frac{d}{dx} \frac{1}{x^{2}} = \frac{-1}{x^{2}}$ $\frac{d}{dx} \frac{1}{x^{2}} = \frac{-1}{x^{2}}$ $\frac{d}{dx} \frac{1}{x^{2}} = \frac{-1}{x^{2}}$	Ja
	$\frac{\partial}{\partial x} \frac{\partial}{\partial x} \frac{\cos x - 3}{\partial x} \frac{\partial}{\partial x} \frac{\sin x + 4}{\partial x} \frac{\partial}{\partial x} \frac{\cot x + 3}{\partial x} \frac{\partial}{\partial x}$ $-2 \sin x - 3 \cos x + 4 \sec^2 x + 7 e^{x/4} + 3$ $\frac{\partial}{\partial x} \sqrt{3} = \frac{1}{2} x^{1/2} = \frac{1}{2} x^{1/2} = 1$ $\frac{\partial}{\partial x} \sqrt{3} = \frac{1}{2} \sqrt{3}$	Ja



Dues	A C
icos.	d (st cosx)
	tand da (x+cosa) - (x+cosa) da tana
	(Jana)
	tann (1 - Sinn) - (x+ cosx) Sec2x
	Function of Eugation
100	Function of Function
- 100	Function of Function Chain suite
Oues	d Sin (x +5)
	Cos(x+5) d (x+5)
	Cos(x+5) (1+0)
	Cos (x+5)
aws	$\frac{d}{dx} \tan \left(x^2 + 8x + 6 \right)$
L. K.	u A
	Sec2 (22+2x+6) d (22+2x+6)
	Sec2 x (x2+2x+6) (2x+5)
ues	p3×
	$e^{3x} d 3x = 3e^{3x}$
wes o	Sin5x
d	$Sin^{5}x$ $5 Sin^{4}x \frac{d}{dx} Sin x = 5 Sin^{4}x Cosx$
	dx Soll x Cosx

		Page No.	
		Dute 1	
Ours	ax	Contract to the second	
100	7 tan6 x d tanx =	tonex Sec2x	
Ques	(37 +5)6	The Company of the Company	
	$6(3x+5)^{5} \frac{d}{dx}(3x+5)$)	
	$= 6(3x+5)^{2}(3+0)$		
Oues	= 18 (3x+5)		
	log 5x 1 d b 5x = 5.1	$\frac{1}{x} = \frac{1}{x}$	
Oues	d Tsina	12 + (** a + ** a	- 7
	2 VSina du Sina = 1	Cosxta d (x.	+a)_
Oves	Sec (Jon (5%))	er de U.V. + et.	
		At a Albana	
	Sec (ton (V5)) · ton (ton (Va)	$\frac{d}{dx}(\tan(\sqrt{x}))$	
) d (tan (sta)) da (Sec²(sta)) d sta	
		(Sec ² (vix)) d vix " dix 1 " avix	
	ELLEN SET STATE	(Sec ² (vix)) d vix " dix 1 " avix	
		(Sec ² (vix)) d vix " dix 1 " avix	
		(Sec ² (vix)) d vix " dix 1 avix (5ec ² (vix))	

Page No.
Date

d Cosx3. Sin2 (x5)

Cos x3 d Sin2(x5) + Sin2(x5) d Cos x3

Cos x3 & Sin(x5) d Sin(x5) o Sin2(x5) Sinx3 d x3

Cosa3 2 Sin (25) Cos (25) d (25) - Sin2(25) Sim3 32

Cosa3 & Sin (x5) Cos(x5) 5x4 - Sin2(x5) Sinx3 3x2

Implicit function

with suespect to (x, y)

Ques $x^2 + e^{x-y} + 2y = 3$

 $\frac{d}{dx} x^2 + \frac{d}{dx} e^{x^2} + \frac{d}{dx} 2y^2 = \frac{d}{dx} 3$

2x + ex-y d (x-y) + & d y = 0

2x + ex-y (1 - dy) + & dy & ====

 $2x + e^{x-y} - e^{x-y} dy + 2 dy$

 $2x + e^{\chi - y} = e^{\chi - y} \frac{dy}{dx} + 2 \frac{dy}{dx} = 0$

 $\frac{dy}{dx} = \frac{2x + e^{x-y}}{e^{x-y} + 2}$

2x + 2x dy + 2y + 3y - dy a.y) & - sin(x+ $\left(\frac{dy}{dx} + y\right) - \sin(x+y)\left(1+\frac{y}{2}\right)$ x Cosny dy + y Cosny - Sin(x+y) - Sin(x+y) dy dy (a cos ay - Sin (a+y)) = Sin (a+y) - y cos ag

7

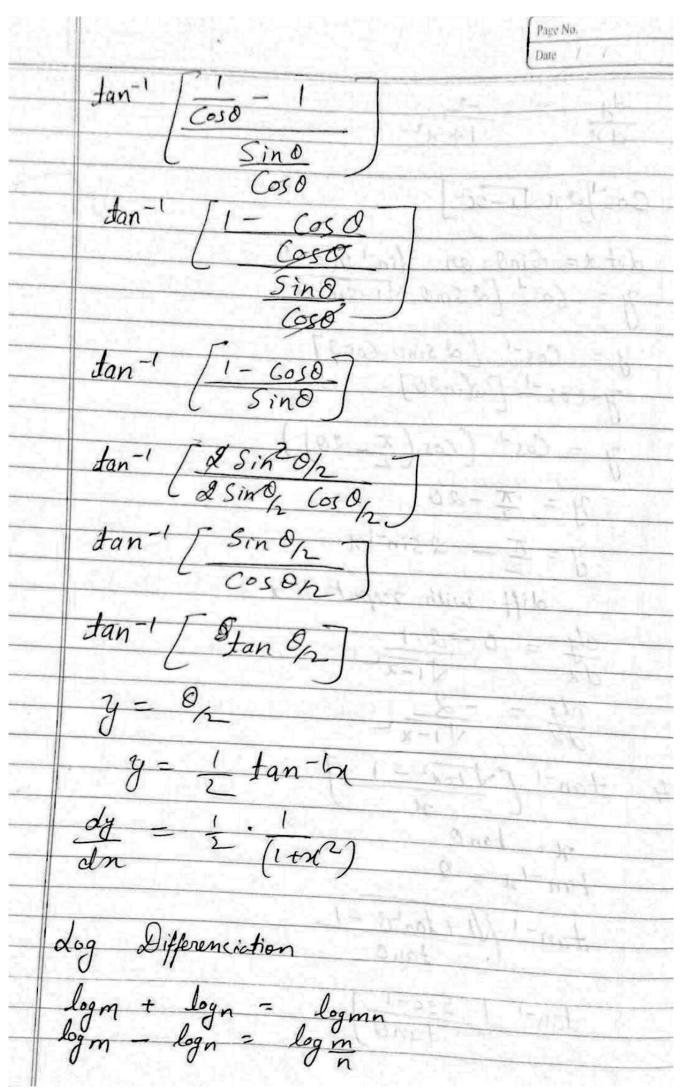
Sin (x+y) - y cos xy x cosay - sin(x+y)] or VI+y + y VI+x = 6 prove dy Sq2 both sides y2 (1+x) x2 (1+y) (AXXX) - my (y-x) (x+y) = - xy 21) 18 17 M2 - 18 15

Page No. Date / Trigonometric Substitution Sin20 = 25in000000 = 2 tan0 Cos20 = 2 cos20 -1 Sind = 2 Sindy Coso/2 = 1- 25in20 Cos20 - 5in20 1- tan20 Sin40 = 2 Sin20 1+ tan2-0 COS 20 tan20 = 2 tano 1-tan20 Inverse formula 121/12-1 Que g - Cos-1 (1-x2) y = Cos-1 (10) 1-x2 Let x = tan 0

tan-1x= 0

y = Cos-1 (cos20) diff with respect to x dy = 2 d fan-1x $\sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$ det x2 tand 1 tan-1x = 0 = Sin-1 (+= 1 - tan20) - Sin- ((0520) -) (050 = 5in(90-6 y = Sin-1 (Sin = -20) 7= 1 - 20 differenciate with prespect to x day - da I - 2-d o tanta

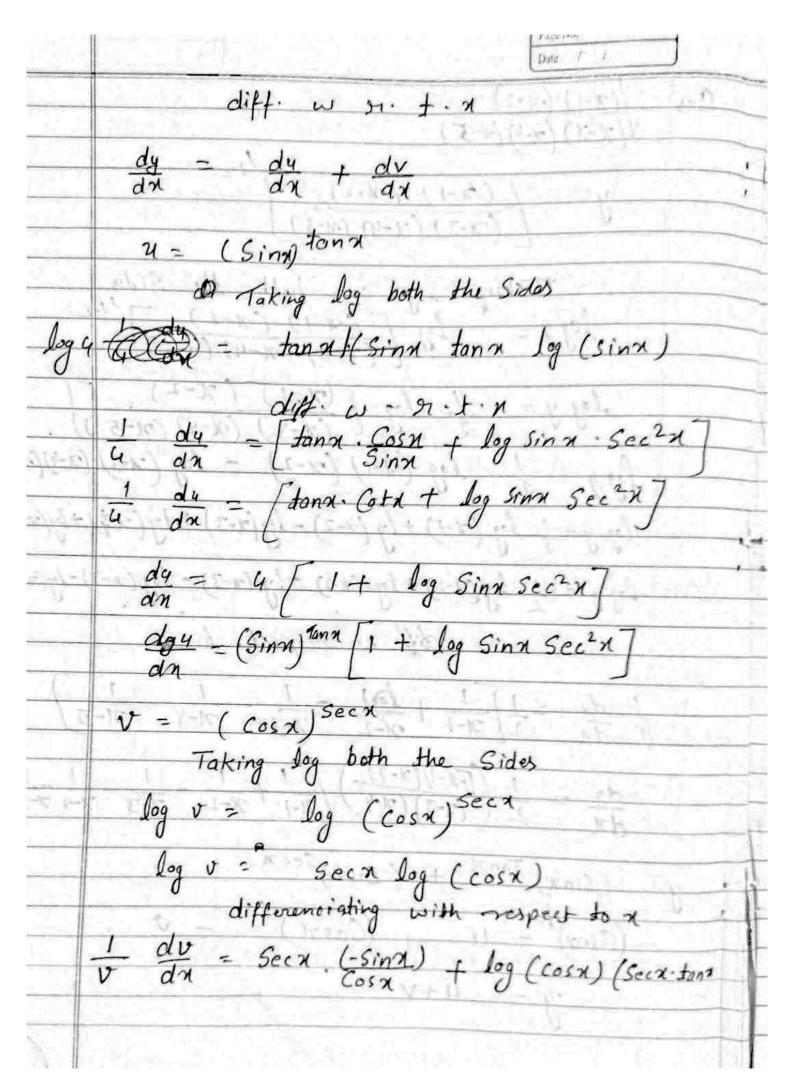
Page No. Dute Cos Jax JI-x2 det x = &in0 on din-1 on = 0 y = Cost [2 sino VI-sin20 y = Cos-1 [& sino Coso] 7-Cos- [din20] 7 = Cost (Cos (= -20) 7 = 7-20 diff with respect to x tan-1 (1+ ton'0-1 Sectan-1



Paper No. Date 1 $n = n \log m$ 2 Sind (1) an both the sides #B log y log asina log y Sina logn differenciating with suspec Sina Cos x Sinm (Sinx) logx y = (Sinx) log on both the Sides · log (Sina) diff: with suspect to a Cosn + log (Sina)

Date dy = log. Cosx + log (sinx) log Cotx + log (Sinx) dy = (Sinn) logx / log. cot n + log (Sinn) Ques Cosx · Cos2x · Cos 3x Cosx Cos 2x · Cos 3x Taking log both the Sides logy = log (Cosn. Cos2x. Cos3x) log y = log (cosn) + log (cos2x) + log (cos3x) diff: w. si. t. n. Cost Cost Cost Janx +2tan 2x + 3 tan 3x - -y / tom + 2 tan 2x + 3 tan 3x oly - (Cosu · Cos2x · Cos3x) [tanx + & tanax + 3 tan3x]

Taking log on both the Sides, = 1 log [(n-1) log (x-1) + log (x-2) - log (x-3) logy = 1 log (21-1) + log (21-2) - log (21-3) diff a suspect. to a [(x-1)(x-2) / x-1 + x-2 - x-3 + (Cosn) Sec x , (Cosu) Seca u+v



Company.	1 do fanx Secon + log Cosn	(Secr. tann)
- 170	v ax	1-23-20
ST-ITE	dv = v tana sexa [log Cosa	-1/
	av = V fant seed (STIPSET LIE
	dr. Seex 1 Com I do	600 -17
THE STATE OF	du = (cosx) secx tanx Sexx [log	(6)
175 1-54	dn	-121-1-11
	d4 - 4 V	Y A
	dy = u + v dx putting the value	0.0
	ax putting the value	of u v
	The design of the second	Coc N.
	1. Com Tann 1 + loo Sing Sect x 1 + (cosm	Per tana Secx
	dy = (Sinx) Tann [1+ log Sinx Sec2x] + (cosm	A Company
	109	(05×1-1)
	dri	
	5207, June 5 8	to the state of
44-11	Paramatric form $x = a \sec^3 0$ & $y = a \tan^2 6$ $y = a \tan^3 0$	
	x = a Sec3 o & y = a tante	find dy ato
	$y = a tan^3 0$	an
	$\frac{y}{diff} \text{with respect. to. M}$ $\frac{dy}{do} = a 3 + an^2 o \cdot sec^2 o$ $\frac{dy}{do} = a 3 + an^2 o \cdot sec^2 o$	of 8 = T/
3.1	du - 2 2 tan20 · Sec20	1
	46	·Sinx = [
	$dy = 3a \tan^2 8 \sec^2 8$	3
		dy 13
	do	da
d bed	nl = a Sec30	-41
	dn = a.3 sec20. (Seco.tano)	
	3 1 0	
	$\frac{dn}{d\theta} = 3a Sec^3 \theta \cdot tan \theta$	
0-1-1	00	
	dy = 3 a t an 2 o Sec 2 o dn 3 a Sec 3 o ton 0	**
	da 3a Sec3o tono	
. S-11	dy = tan B	
y - pul	COAD	
	dy = 6ino	
Figure 1	= Cravera an	
M. Nell	dr Cos o x seco	
The sale		