



		Chapter	LAGICISG
Ľ	TUTORIAL	Chapter 5th	Exercise 5.2
Crack	the Concepts, No just Exams		Pagel
	4. 1.2.51	to the second se	9
1.	310(20+5)		
- "	: dy - d/510	(x2+5))= (05(x2+5) d (x	(+5)
	de de	(2+5)(2x) = 2x. Sin(x+	: d sin x = Cosx
	4.40	2	dx
_	= 005(2	(+5)(2x) = 2x. Din(x+	5)
	i dy . Jr	185(x+5) Ans.	
	de	(4.3)	
Samuel III	• • • • • • • • • • • • • • • • • • • •	1400101-100	
2	(OS/SINX)	the deliverage from the result	233 6-
	is dy = d co	os(sinx) = - Sin(sinx) d(s	(Inv)
	Ju ou	de	27-25-9
			U.SINS
	= -810	(BINX)- COSX	dx dx =- Sinx
		a dinidina) PM.	- dx
	7,	sx din(dinx) Pos.	
_	ga		
			a Chalacha Cara
3	31n (ax + b	)	
	The state of the s		
_	14 94	(ax+b) = (05(ax+b) d (0	X+-b)
	gh un		
	= · cos(a:	x+b)(a)	
			1-3/0
	dy = a cos(	ax+6) Ms	
			21 x 318
4	Sec (tans	(x)	44
	-lul (-	c(tansiz) = Sec (tansiz) ta	Mante la lalant
	- dx	Change ) = Sec (langs) In	de de
	are or		102
	= Secto	anse)tantanse). Sector. 1	Satanx = secx
		સ્ક્ર	d. K = 1
			dx zix
-	001 000	W 43	
5	Sin (ax+	Ы	
	Cos(cx+	d)	



,	NIG	Chapter	Exercise
Crack	TUTORIAL the Concepts, No just Exams	Chapter5M	Exercise 5.2
-			Page 2
	dy = d sir	s(cx+d) = Cos((x+d)d &o	
		/An	s(cx+d))2
		using (")= vu-uv	AVIE TO THE
		(V) V2	
	= Cos(c	x+d) cos(ax+b) - &10 (ax-	+ b) [- din(cx+d)]
-		(Cos ((x+d))	2
-	=a. cos(c	x+d) cos (0x+b) + csin (ax-	+5) din(cx+d)
		(cos((x+d))2	IN THE REAL PROPERTY.
	= a los(	(x+d) cos(ax+b)+ csin(a	x+b)(+xSin(cx+d)
		Cos2((x+d)	
6	65 × 813 (5)	)	304
	65x3 5102(x5	)	Arts L
	let y = cosx3	Sus (x5) = ws x3/sin(x5	)2
	: dy = cosx	13 d (510 x5)2+ (510 x5)2d1 dx (4510 puod (4510 puod c3. 2 510x5 d 510x5+(510x5)	wsx3)
	92	(Using pub	Jud rewel
-	0 = (05 ×	3. 2 310x5 d 510x5 + (510x5	5)2 (- SInx3) d x3
	= 20	523 51025 6525 (524)+ 51 14 6032 51025 6525 - 32510	n2st5 (-51nx3).(3x2)
	=  0 %	1 605 x 51nx 605 x 5 - 3751n	525 Sin x 3
	> x2 sir	125 (10x2 cos3x cosx5- 3 sin	x551n3(3)
	4 1 7 7 7		
		I A de la	stat I 3
		The state of the s	1776)

Chapter\_\_



Chapter\_\_\_\_\_Exercise\_

Exercise 5.2

Chapter 5th

Crack th	e Concepts, No just Exams	Page 3
DN07	2(01/2)	tropaces.
	(et y = 2/cot(x) = 2(cot(x))\$	415 5 15- 700
	dy=2 = ( co+x2) 1/2-1 d co+(x2)	
	= (cot x2) 12 (- cosec2x2) d x	
	= - cosec x2. ax2>	c cosec <sup>2</sup> x <sup>2</sup>
	JCO+x2	J Cot x2
PNO-8	Cos(se)	- 14-32
	led y. cos(se)	
	i dy = d cos (se) = - 810 se d se	= - Sinfe - 1
	dx dx	Str
	y s	ing of cosx = - Sinx
	F CLUSS PARTIES.	
	The second second	व भिः ।
		NY ZIX

and we can say 1'(c) or Value of f(x) at x=c

we have fixe = 1x-11, x ex

and we want to show fix is not differentiable at

of we substitute se:1



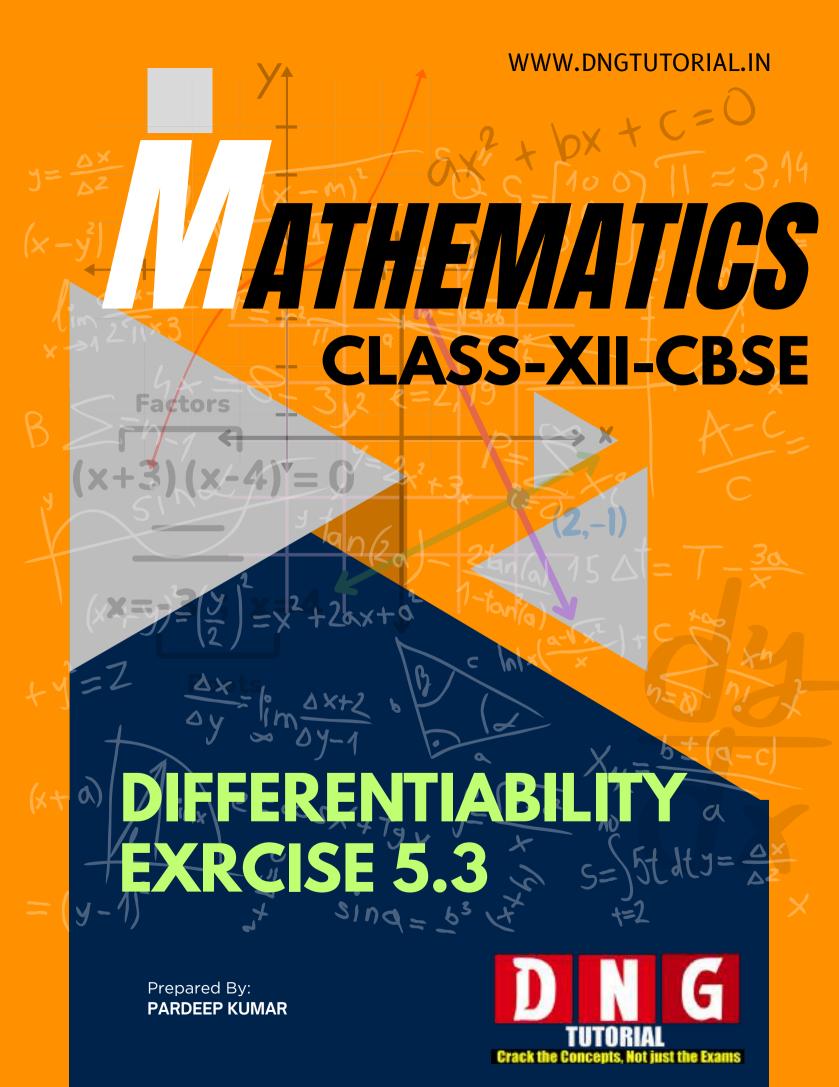
G	Chapter	Exercise	41
RIAL ts, No just Exams	Chapter 57 04	Generability Exercise	5.2
ts, No just Exams	V *	Pas	3e 4
f(x)=11-	1]=0	Adval 4	Lac.
HD = 1-2'C	1) = 11m. 8(x) - 8(1	)	
0	X-31, X-1		
	= 11m.  x-1)-	(0)	
	x-1- x-1	19 34	
	1-  x-1 -1	0) - (N-1)-0 -	(x-1)1
	x-)1- x-1	(0) = - (ac-1) -0 = -	x-1)
1- 144			1
LOS CHE	x->1= x<1	x-1  >-(x-1)	+
- 10			
SHD	4(x)-4(1) = lim.	14-11-10)	-
1100	713-1- = Lim.	ac-1	-
~	100		R-dub
	= (x-1).	1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 =	
	(x-1)	املا	
·· (H) =	RHD	Man har ha	
	not differentials	de ad se = 1	
Des	Late 14		
·	f(x) = [x], 0 <	W / 2	
to check e	differentiability as	r.7-1	
of we pur	1 = 1 Then f(1).	[1]=1	-
M 14 M	1 1141 1111	1 (4) (0)	al al alta
low LHD	lim. {(x)- {()}:	lino [x]- f(1)	
	×1-31 35-1	(-)1- x-1	
Put	シェートル、イルウ	0*	
· lin	n [1-h]-1 = [1.	-6]-1	
h-3	1-A-1	-ti	
weknow	that his of and	[(-ti)= c-1 4 c	
	n 15/2004		



Crack ti	TUTORIAL he Concepts, No just Exams	Chapter Sth	Exercise	e 5.2 Page 5
		not exist of differentiable at	J(=1	
	Differents x=2	bility at = 2 = 2 , \$ (2)=[2]=2	•	
		1(x)-f(e) - fino	[x]-f(2)	
	x = 2	-t, h-10+ Im [2-4]-2. L 5-30+ 2-4-2 ti-	1-2 -1.	九
		im 1-1-0 n-oti o does nor		
	· +(x) 5	also not different	pable at x=2	
		hanks for follows	d	
<i>St.</i>	*			
			AL LIL	
1000	(Intro)		62	280034687

Chapter\_\_\_\_

Exercise





TUI Crack the Cond	TORIAL Chapter 5th Differentiability Exercise 5.3  Page 1.
	In a Picial de Land
	and dy in the following exercises 100 15.
	de de la me following exercises 100 15.
	920
·-	2x+3y-510x
	diff. both sides
-	d (2 x) + d (3 y) = d SIDX
-	2+3dy = 105x
-	
-	dy = cosx-2 Pms.
	On 3
_	
2.	2x+37=51ny
501	: differentiating both sodes w. 4.1. se
	dr (2x) + d (3y) - dr (Siny)
	VII. 1921
	2+3dy-cosydy
_	
	cosydy-3dy-2
	dr dr
	dy (cosy-3)=2
	in dy = 2 Pons
	dr cosy-3 -



Chapter	Exercise			
Chapter_	Defferentability	Exercise	5.3	
37.77.79	0	a light by glass, to be		

Concepts, No just Exams	Page 2
AN + Lid - Inch	10
Like I H & alac	
008.0000 01000	
of (ax) + a (b) = ax (cos)	
a + 25 y a y = - 21 b y a y	
570.00 740.00	
2 by 94 + 81ny 94 = - a	
92 at	
dy (2by+ s)0y)=-a	
118.176	
dy = -a Pors	
de 2by+diny	9
14 + 42 - tanx +4	100
OUNT, DOIN MORA	
d (xx) + d (x2) = d (tanx+y)	
an and and	
49x+x0/41+2404- 01-1014+014	
लेश लेश लेश लेश लेश	
4+ x dy + 2x du - locex + du	
विष विष विष	
of and	
ay (x+ey-1) = sec x-7	
dy = secx-y long	
dx x+24-1	
	ax + by = (0sy  diff both sides  d (ax) + d (by = d (cosy)  a + 2by dy = -8iny dy  aby dy + 8iny dy = -a  dy (2by + 8iny) = -a  dy = -a  d



Chapter

Exercise

Chapter Differentiability Exercise 5.3

concepts, No just exams		,	Page3
22+ xy+y2=	106	U or Photo	1 0
dith hoth sides			
d x2 + d(x4) +	d y2= d (100		
2x + ydx+x	1(y) + ey dy = 0		
		Tuesday In	
2x+y0)+x2	y + 24 dy = 6	XIII	
		E ALL	
		46	
dy 1	(2x+4) A	N	
đx -	x+ ey =		
3	3 - 0.	02.5	
n+29+34+9	= 01		
auff. both maes	1cm2 -1 -1 -1	3. 1.0	
3x2+ y = (x)+2	x2 dy + y2 d(x)+:	ed (4) + 34°	dy = 0
3x2+ axy+x2d	3 + y2 + 2xy d	+ 3 ya dy	20
x2 dy + axy a	1 + 34 dy = -34	E-2×4-23	
			. 9
dy (x + 2x	(y+3y2)=-3x=	- 2>cy-y= = -	(3×2+2×y+y)
dn = -1	3x+3xy+y2)	an	
an	x2+ 3x4+342	_	
	0 0		
	22+ 24 + 42 = diff. both sides  at + yat x + x at at x + x at at x + x at x + x at x + x at at x - a	22+ xy + y² = 100  diff. both sides  of x² + d(xy) + d y² = d(100  dx dx dx dx dx dx dx dx   ax + yd x + x d(y) + ey dy = 0  dx dx dx dx dx dx  dx - (2x + y)  dx - (2x + x)  dx - (2x + x)	22+ 24 + y2 = 100  diff. boih 5 des  of x2 + d(xy) + d y2 = d (100)  dx dx dx dx dx dx   2x + y(1) + x dx + 2y dy = 0  dx - (2x + y) Ax  dx - (3x + 2xy + y) + 3y dx + 3y dx  dx - (3x + 2xy + y) = -3x - 2xy - y^2  dx - (3x + 2xy + y) - (3x + y)  dx - (3x + 2xy + y)  dx - (3



Chapter	Exercise
Chapter	Evercise

SIDZX	+	Siney	dy	:6
		0	dx	



Class Chapter Sofferent ability

Exercise 5.3

51024 + COSSCY = x differentiating both sides

differentiating both sides

differentiating both sides

differentiating both sides d (Siny) + d cosxy = 0 · 2 siny d siny - sinxy d xy =0 asing cosy dy - sinxy gd(x) + x dy =0 sinzydy - Sinxy y + xdy = (: 2siny cosy) = Sinzy = sinzydy - y sinzy - x sinzydy =0 SINZY dy - x SINXY dy = y SINXY dy (sinzy - x sinxy) = y sinxy dy = y sinxy dx sinxy-x sinxy m 51n221 + 51n24=1 differentiating both sides d (sing) + d (sing): d (1) d ( SIDX)2 + d (SIDY)2=0 2810x d sinx + esiny desing =0 6280034687 2 SINX WSX + 2 SINY WSY dy =0



D	Class Chapter Differentiability
Crack th	TUTORIAI Exercise 5'3
9	y: 515' (2x)
	Now we have inverse higonometry function we need buch hailib we could yeniore inverse. So lets they:
	Led x = tano => o = tank
	y = ∈' ( 2tano )   Sinzo = 2tano ]
	y: sin' (sin20) = 20
	Now diff both sides wet 1. x
	dy = 2 tari'xe = y
	$y = 2 \tan^2 x$ $dy = 2 \cdot 1 = 2  \text{forms}$
	dx 1+x2 1+x2
10	y = tan-1 (3x-x3); -1 < x < 1 1-3x2 ); -1 < x < 1
	Us tan'x
	y = tan' ( 3tano - tan's) = tan' (tanso) = 30
	: y = 300 => 3 tan'x 6280034687
200	-1. H L 41 C. Ja. 0200034007

n	M	C
v.	A L	2
Crack the C	UTUKIA	just Exams

Chapter

Exercise

Chapter Defeuenbability Exercise 5.3

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dy = 3. 1 = 3 pm [: d tain = 1 dx 1+x2 1+x2 dx 1+x2 Ju

11 y= cos1 (1-x2), 0 < x < 1

led x=Tano =) 0= tan'x

: y = cos' ( 1 - taneo) = cos' (coseo) = 20

y= 20 = atorix

y= alante

diff. both sides, we get

dx 1+x2 1+x2

dx 1+x2 ms

y= 315-1 (1-22), 0 < x < 1

led x= tano 12 = tant >

y= 810-1 (1-tan20) = 810-1 (0520)

= Sin' (Sin ( = -20)) = Ma-20.

: 4 = 1 - 20 = 1 - alan'x



T	NG	Chapter	Exercise	
ע	TUTORIAL	Chapter Ditteren	bability Exercise 5.3	
Crack ti	ne Concepts, No just Exams	00	page 8	-
		(asino)1-3100)	Had the h	
	9: 210	1 (25100) cosão) =	Sin (asinocoso)	
	± 510	( SID20) = AD	V. F.	
	4 - 20	Land to		
	y = 2 :	sin'ac	3653	
	diff. bo	th sides		
	du	a 1	201-21	
	dy =	JI-322	2.00	1
	: dy	· 2 ms	- 10 TON	
	dx	1-sea -	24558	
				_
15.	y= Sec	( 2×2-1) =	31 - 4 5	
	let x= co	30	A A CONTRACTOR OF THE PARTY OF	
	0 = 0	1051×		5-13
	y = Sec	-1 ( 1 = 8ec	( tos20 : cose -1	- 5100
			(40,000)	
	y- sec	. (Secal) = 20	F10:	
	ditt hott	1. (Secal)=20 : 205'x sides		
	dy -	8. / - 1	- E6	
	đх	8. (-1, 11-x2)	24.15	
	dy	-a Am		_
-	dx	11-22	E York A D	
	That	Nos for followin	2_	
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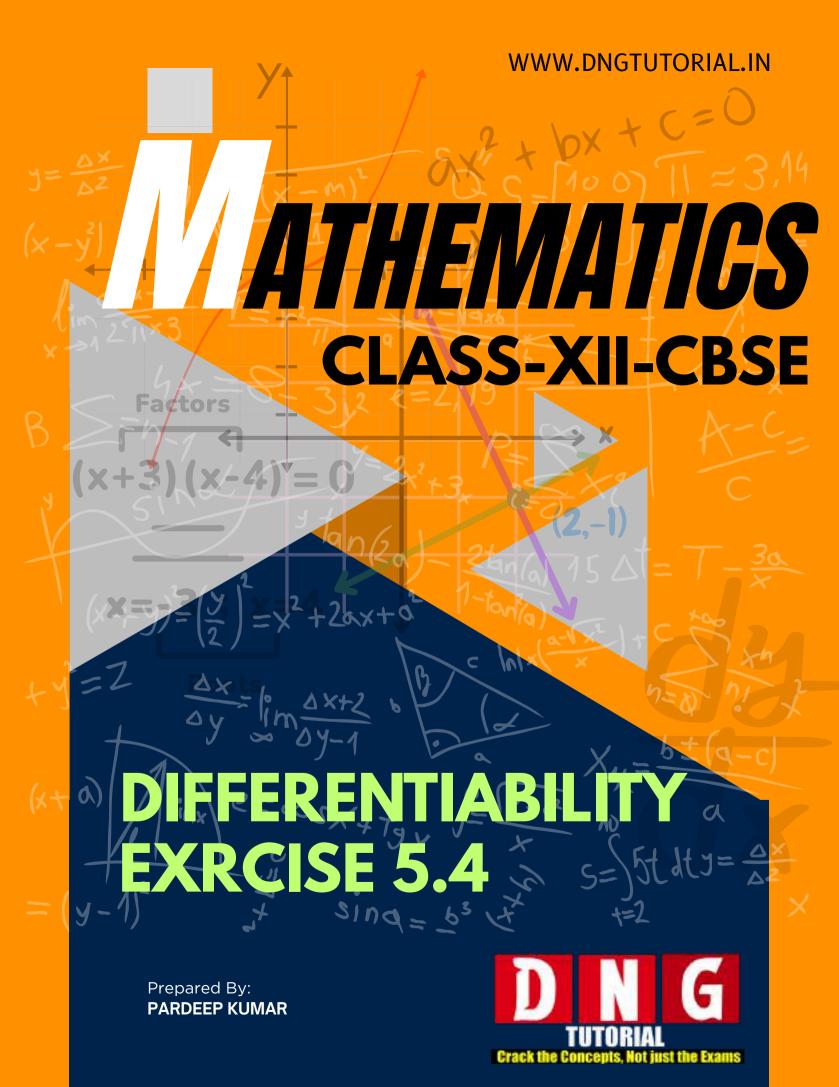


Chapter Differentability Class 5.3

Exercise

diffy both sides

diff bolk sides





Class Chapter Diffesentiability

Exercise Ex. 5.4/1

	E E IE IEIO LA COMPINIO COMPANIO
	EXPONENTIAL & LOGIARITHMIC FUNCTIONS
	some Imp logarithmic colenhones
	log pe: log p+ log se
	log p2= 2 log p= log p+ log p
	log p" = n log p
	logo x = logo x - logo y-
	Differentiate the following wast se
1.	SIDX
	diff
	= Sinx. ex ex cosx = ex (Sinx-cosx)  Sin2x Sin2x
a.	SIDE
	dy = d (e310-1x) = e510x d sin'x
	= e 515 x (1-x2) my
CHEE	6280034687



Chapter	position	Exercise	
	2	18 Till Gold in the felt	
Chapter	5.4/2	Exercise	

Crack th	Concepts, No just Exams
3	ex3
	(e) y = ex3
	1.4 L. H C d.
	$dy = d(e^{x^2})$
	an dx .: d e .:
	= ex3 dx3 = ex3 x2 = 3x2.ex3 dx = e.dx
	gr.
4.	an I dan - 1 e - x )
4.	ust y= sin(tan'e-x)
	wy = sin( tanie)
	dy = d (sin (tan'ex)
	= los(tan'e-x) d tan'e-x
	ax
	= cos(tantex) 1 al ex
	1+10-81 dx
	= cos (tañ e-x). 1 . e-x d 1-x)
	= cos (tan'e-x). 1 . e-x (-1)
	1+6~
	= - cos(tante-x). 1 . e-x pons
	1+6-
	1 - 1 - X 1
5.	y=log(cosex)
	9= 209 ( WSE)
	dy delegerosex)- 1 desex
1001	dy = d: (log(cose*) = 1 d cose* dx dx (cose* dx) 6280034687



Class	Chapter	
Evereine	5.4/3	

Crack th	e Concepts, No just Exams	and he and the second
	usex (- &inex) d	×
	w w	Marian at a second
	cosex sinex. ex di	(*)
	use- ax	
	- ex. &102x (1)	( d ( ) = 1 ]
	= - ex. tanex pms	
	, , ,	
6	ex+ex=-+ex5	
	y = ex + ex + ex5	
	dy. d (ex+ex=+ ex5)	The state of the s
	dn dn	Wine I
	= dex + dex + + d	(×5
	du du du	B Pall
	= ex+ ex d x2 + ex3 d x3 +	exdx4 + ex5 d x5
	dx dx	dx dx
	= ex + ex (24) + ex (342) +	ex (423) + ex 5 (5) x1
	La Lepter Lepte 2	
	= ex+ 2x. ex+ 3xex+ 4x3e	+ 5x4ex5 Ams
	1-421 1 2-41	
	we have applied of	f(x) . f(x) d f(x)
	dx	dx
7.	le le	A TAR E
- (	led y= lete	72°
	dy - d late - d (ofe)/2 - 1,08	1/2-1 John
	de de de 2	dx
	= 1. 1 , plxdsx = 1.1	ose, 1
	2 /e/x dx 2/e/x	2 / 54
1251	00850 - 1.1 . /x , 1 p/x	ML 6280034687
	2 Telx 2/2 4 Jess. 5	1



Chapter		Exercise	
Chapter	d	Exercise_	5.4/4

Crack the	TUTORIAL Concepts, No just Exams
8	log 1 log se), se>1
	y- log (logn)
	dy = d (log(log(x))
	byx dx logx x dx
	Logx x sclogx
	logx x sclogx
9	logic
	y = <u>cos</u>
	dy = d (Losx) = logx d Losx - Losx d logx dx dx (logx) (logy)2
	dx dx (logs) (logs)2
	- logn (- SIDN) - COSN. (31)
	- togs (-109x)2
	= - Sinxlogx - cosx. L
	( logy) E
	= -   Sinx logx + COSX   -   xc sinx logx + cosx
	= - Binx logx + COJX = xcsinx logx + cosx   xc(logx)2
	( (cogst)
	The state of the s



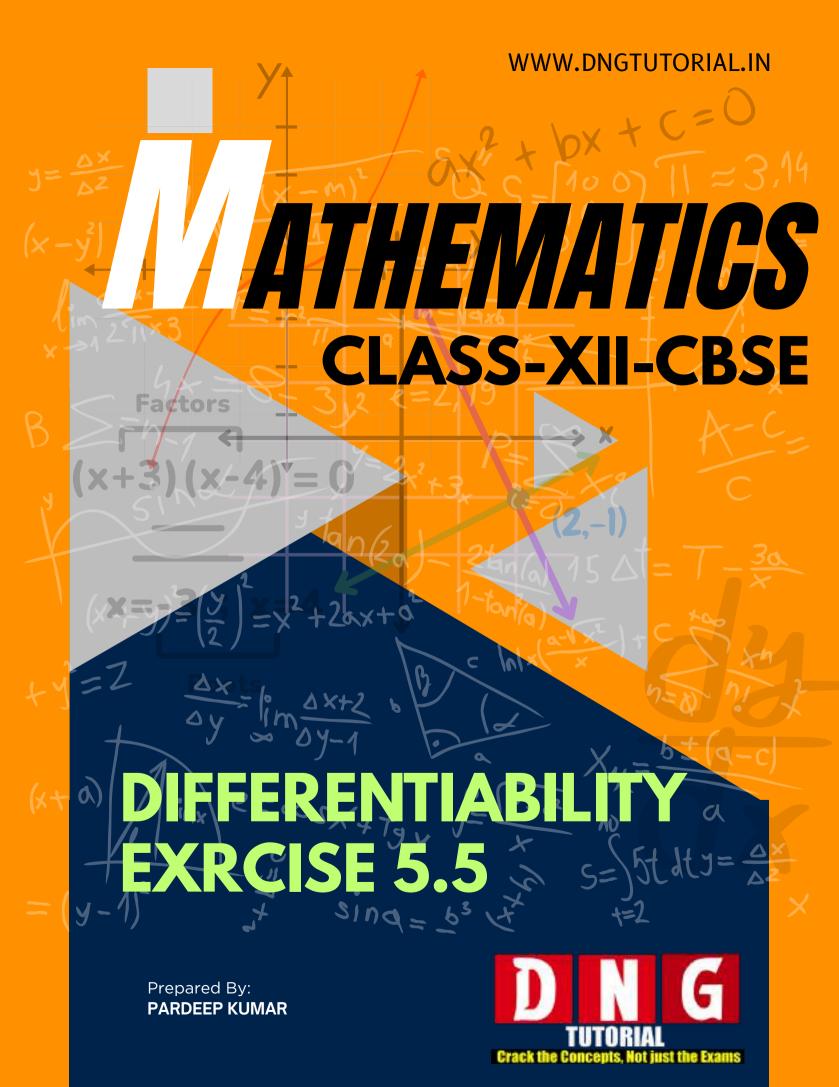
Class Chapter DIFFERENTIABILITY

Exercise 5.4/5

10  $\cos\left(\log x + e^{x}\right) \times 70$   $y = \cos\left(\log x + e^{x}\right)$   $dy = d\left(\cos\left(\log x + e^{x}\right)\right)$   $dx \quad dx \quad dx$   $dx \quad dx \quad dx$   $= -\sin\left(\log x + e^{x}\right) \frac{d}{dx} \left(\log x + e^{x}\right)$   $= -\sin\left(\log x + e^{x}\right) \frac{d}{dx} \left(\log x + e^{x}\right)$   $= -\sin\left(\log x + e^{x}\right) \frac{d}{dx} \left(\log x + e^{x}\right)$   $= -\sin\left(\log x + e^{x}\right) \left[\frac{d}{dx} \log x + \frac{d}{dx} e^{x}\right]$   $= -\sin\left(\log x + e^{x}\right) \left[\frac{d}{dx} \log x + \frac{d}{dx} e^{x}\right]$   $= -\sin\left(\log x + e^{x}\right) \left[\frac{d}{dx} \log x + \frac{d}{dx} e^{x}\right]$ 

= - 1 &In(logx+e4) - e4 sin(logx+e4)

Thanks for following





Class	Chapter	
Exercise	5.5(1)	SHEET W

12(0)(3)	
	is a function, then the publess of differentiating a function after taking the logarithm is called a logarithmic
	is a function, then the purioes of differentiating a
	Luchen alter taking the legitle in call of a line in
	of the agree well in agarding is called a regarding
	1 21,0000
	Function will be of the form (fix) g(x)
	Note: log a25°cP
	12 1t
	= 2loga+slogb+plogc-9logd-tloge
	1 0 0
	also log(u+v) # log u+logv
	log(u-v) + logu-logv
1.	LOSK LOSSK COSSK
-	
	Let y = cos × cos × cos × cos ×
	taking log bolly sides
	log y = log (cosx cosex cosex)
	logy = log cosx + log cosxx + log cosxx
	Jay = 1. ol (cosx) + drossxx + drossxx  y ax cosx dx dx dx
	1 dy = 1 , of cosy , dosper , dosper
	y de cosede de de
	COSX (-317x)+1 of cos2x+1 of cos3x0x
-	
	&Inx + 1 . (-SIN2X) dx + 1 . (-SIN3X) d 3X  COSX COSXX dx COS3X dx
	cosx cosxx dx cosxx dx
	= - 817x - 8173x . 2 _ 8173x . (3)
	COSX COSZX COSZX
	- [tanx +2tan2x +3tan3x)
	7
	.: dy, -y (tanz+ atanaz+ stanaz) 6280034687
	dn = - Cosx cos2x cos3x (tanx+xtan2x+34n3x)



Crack	ne Concepts, No just Exams
d	(x-1)(x-2)
	(x-3)(x-4)(x-5)
	1.4 4- (x-1)(x-2) = (x-1)(x-3) 2
	Let $y = \frac{(x-1)(x-2)}{(x-3)(x-4)(x-5)} = \frac{(x-1)(x-3)}{(x-3)(x-4)(x-5)}^2$
	taking log both sides
	logy = log (x-1)(x-2) = 1 log (x-1)(x-2) (x-3)(x-4)(x-5)
	209 y= 19 (x-3)(x-4)(x-5) = 1 trg (x-3)(x-4)(x-5)
	= 1 log(x-1)+log(x-2)-log(x-3)-log(x-4)-log(x-5))
	25 410 10 10 10 10 10
	differentialing bull sides, we get
	1 dx = 1 [d lag(x-1) + lag(x-2) - lag(x-3) - lag(x-4) - lag(x-5))
	= 1 1 d (x-1)+1 d (x-2)-1 d (x-3)-1 d (x-4)-1 d (x-5)dx
	- X-101 X-24 31-34 X 44 ( 5)
2	= 1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	2 [X-1 X-2 X-3 X-4 X-3]
	i. dy - y [ 1 + 1 - 1 - 1 - ]
	ax 2 x-1 x+2 x-3 x-4 x-5]
	=1 (2-1) (1-2) 1 + 1 - 1 - 1
	2 (x-3)(x-4)(x-5) (x-1) (x-2) (x-3) (x-4) (x-5)
	NOMES NAME AND ASSOCIATION OF THE PARTY OF T
	cosx
2	y = 1/bgx
	-laking log both sides
	logy = log( logx) cosx = cosx log( logx)
	olithe both sides
1.3	$1 dh = d (\cos x \log(\log x))$ 6280034687
	+ + + + + + + + + + + + + + + + + + +



Class	Chapter	MIN TO THE
Exercise	5.53	

Crack the C	UTORIAL Concepts, No just Exams
	1 dy = log (logx) d cosx + cosx d log(log(x)
	र्वे वस
3	= log(logx)(-sinx)+cosx 1 d logx
	=- SIDX. log(logx) + cosx.). L
	The second secon
	= Cosx - Sinx. log(logx) selogx
	selogie
	i dy - y cosz - sinx log (logz)
	du ( resultation ( los ( log x ) )
	= (logx) cosx (cosx - sinx log(logx))
	Note: -> of we have $y = (+(x))^{g(x)} + (+(x))^{g(x)}$
	y= (+(x)) + (4(x))
	02 y=(b(x)) ± h(x)
	62 y= (7)(4) 2 m(4)
	or y = (fix) + k where k is a constant
	y = (700) I'M Where to a consum
	we are not going to start by taking try of both sales
	we are not going to start by taking long of both sides function will be taken separately equal to 4 and v
	ven 1 = 4C1
	dy - dy + dr dx dx dx
	and find separately du and dr



Exercise 5.5(4)

70,8350	
4	y= x2 2510x
	1.4 11-20
	taking log both sides   dr = d a sine
	logu= log x = x logx dx dx
	Diff. both sides 1 dv = 3 togs d sinx
	u du = d (x logx) [: d ath) atx) by a d (x)]
	Lax dax
	- 100 d MIL X d 104X
	dr = de logs lose
	= log x +1 = 1 (03x.2". lug2)
-	
	du= u(logx+1)  dx=xx(logx+1)
	= X ( 20 9 x +1)
	du du la Xilanii) massariinsa sinx las 7
	in dy du dr = xx(logx+1)-2 (Losx. 2510x loga)
	= x ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (
5.	$(x+3)^{3}(x+4)^{3}(x+5)^{4}$
	y= (x+3) (x+4)3 (x+5)4
	taking ling both sodes
	logy = log (x+3)2(x+4)3(x+5)4)
	way = lug (x+3) + lug(x+4)3+ lug(x+5)4
	logy = 2 log (x+3) + 3 log (x+4) + 4 log (x+5)
_	
-	Diff. both sides
	d logy: d (2 log(x+3)+3 log(x+4)+4 log(x+5))
	1 dy = 2 d log(x+3)+3 d (x+4) + 4 d (x+5)  - 4 dx - 21 d (x+3)+3·) d (x+4)+41 d (x+5)  1 x+3 dx (x+4) dx x+5 dx 6280034687
	8 dx - 21, d(x+3)+3.1 d(x+4)+41 d(x+5)
7881-	1 2+3 dx (x+4) dx 2+5 dx 6280034687
	9 = 018 = 2 (1) + 3 (1) + 2 (1)



Chapter Exercise (55/51)

Crack t	TUTORIAL Chapter Exercise 5'5 (5') the Concepts, No just Exams
	dy = y 2 + 3 + 4 (x+5)
	$\frac{dy}{dx} = (x+3)^{3}(x+4)^{3}(x+5)^{4} = \frac{3}{x+3} + \frac{4}{x+5}$ $\frac{dy}{dx} = \frac{(x+3)^{3}(x+4)^{3}(x+5)^{4}}{x+3} = \frac{3}{x+4} + \frac{4}{x+5}$
	an [x+3 x+4 x+5)
6	$\left(x+\frac{1}{x}\right)+x^{\left(x+\frac{1}{x}\right)}$
	tet $y = (x+\frac{1}{x})^{x} + x(x+\frac{1}{x})$
	$u = (x + \frac{1}{x})^x$ and $v = x(x + \frac{1}{x})$
	4 - 11 + 19
	dy = du + dv
	U= (x+1)2
THE	log u = log (x+ = > c log (x+ =)  differentiating both sides werd x
	differentiating both sides werder
	du logu = d (x log(x+x)
	1 du = log (x++) d (x)+x of log (x++)
	= lig(x+1)(1)+ x. 1 d (x+1)
	= lig (x+1) + x2 1 [d(e) + d(1)]
	= log (3(+1) + x2 / 1+/-1) ]
	= log(x+1)+x (x2+1)
VU/AC	$= U \left[ \frac{\ell - q}{(x + \frac{L}{x})} + \left( \frac{n^2 - 1}{x^2 + 1} \right) \right] = 6280034687$



Class	Chapter	
Exercise	5.5/6	

-	(1+4)
	$g = \chi^{(1+\frac{1}{2})}$
	talking log both sides
	log v = log [x(1+x)]= (1+x) log(x)=(n+1) log x
	diff. boll sades
	du leve d [1x+1 1 legx]
	dr ligv= d [(x+1) ligx]
	1 dv = 1 bg x d (x+1) + (x+1) d (legx)
	= lgx (nd(x+1)-(x+1)d(x)) + (x+1)(x)
	x2
	· light ((4)(1)-(x+1)(1))+(x+1)
	= logx (x-x-1)+(x+1)
	= logx (-1) + (x+1) = - logx + (x+1)
	( xez) ( xez ) nez (xe)
	dr = v x+1 -16-9x
	$\frac{dv}{dx} = v \left[ \frac{x+1}{x^2} - i \frac{h \cdot g x}{x^2} \right]$
	dy du du
	ax dx dx
	(X+2) M+1 1 2x1
	= (x+1)x[log(x+1)+(x2-1)+ 1(x+2)(2+1)-1 logx)
-narra-	



Chapter		Exercise	
Chapter		Exercise 5.57	

Crack	ne Concepts, No just Exams
	Q.No.7
	y = (logx)+ x logx  Let U=(logx) and V= x logx
	let lis (logx) and v= x logx
	us us (1072) and v= 2
-	2 - UTV
	ay - du + du ax ax ax
	qr v
-	U= (legre)*
_	Taking us soly sige
	Log U = Log ( togs = se tog ( togs )
	differentiating both sides
	d (log u) = of (x log (log x))
	ax o ax
	udu = log(logy) d(x) + x d (log(logx))
	= log(logx)(1)+x 1 of logx
	logx de d
	= log(logx) + se. 1 x 1 logx se
	logx se
	= lrg/lrgx)+1
	toge
	· du = u [log(log) + togx] = (log) [log elgx) +1
	de l'accomption (accompt)
	V = x 189x
	taking log both sides
	. () () (1444)
	. 0
	diff. both sides
1865	$\frac{d}{dx}(\log v) = \frac{d}{dx}((\log x))$ 6280034687
OUPL	L dr = 2/09x d 109x = 2 ligx: 1
	v de de



Class	Chapter	
Exercise	5.5/8	

Crack t	Ne Concepts, No just Exams	
	: dy = du + dy	Marcon Viete
	i. dy = dy + dy	nia) Wife
	= (logz) (log(logx)-	+1 ]+2 log oc. 1
	SA COLUMN SA COL	11945
8.00	(SInx) + SIN/R	San Sale
-	4 = (SIDX) + SIN /2	
		nd V= 815/5c
	4 = U + V	CS V 2 13117 V C
	1	2016.
	i dy : du + dv	CARROGALISTS.
	Now U=(SIN)X	41.0.
	taken land the land	V= 515/12
	lagu= log (sinx)2	diff. boly sides.
	109 U= 109 (SINX)	dr=d sin'l'x
-001	lagu = xelag (Sinx)	
	diff. both sodes	= 1 2 [x.
	dy dy (x log (SIDX)	1-(131) = 012
	1 du = 10g(SIDN)d(x) 4 dx + x d log(SIDN	Ji-xe esse
	4 01 + x d log (811)	dx 2 x(1-x) 2 x-x2.
100		dx 2 x(1-x) 2 x-x2.
-349	= log(sinx)(1)+x. I d sinx dx	STREET, SELLING THE STREET
272	d sink	
		Market Mark
MARS IN	= log(SINY) + x . Lose	
- 1	du = 109/5/10x)+xcosx,	= (GIDX) = (109(SIDX) + X (05X
	du sink	SINE
	.: dy = dy + dv - 169/8/104	1+x65x7+ 1
180	i dy = dy + dy = 109(810x)	SINK 2 5 8280034887
	- Kennillag (CINV)	= (SINX) [ log(SINX) + x 405x SINX   1 SINX   2/x x 6280034687 + x . cotx + 1 = x . cotx + 1
	- (31934) [10] (3194)	العـعاد



Class\_\_\_Chapter\_\_\_\_\_
Exercise\_\_ 5.5 9

P.010	SINKLICINX	ve a New York
2 40.1	y = x sinx + (sinx) cosx	No. 11th 346
	U=x SIDX and	V= (510x)
		V E (SING)
	dy- u+v	San Market Car
	dy = du + dv	facesty du este a l
	The state of the s	[30]E1 - N - ISI
	Now	V= (SIDX) COSX
	U = xSInx	V= (SIDE)
	laking lag boly sides	taking log borg sides
	109 (x = 109 (x = )	lag v= lag ((sinx) cosx
	logu= sinxlogu	189 V= COS × 189 (SINX)
	of ste. both siden we got	oliff. both sides, we get
	of Ingued (SINX light)	allegv=al(cosx(eng(s)nx)
	du du	ax o ax
	udu - logyd sinx+sinxel logx	1 dv = log(SIDN) d(OSX + COSX d
	udu du du	
	= 1094. COSX + SINX. 1	1 dv = lagsinx (-sinx) + cosx. 1 d sinx
	= 109x. cosx + 51nx x	V dix Simer
	- FE	Ldv=-sinx lysinx+ cosx: L. cosx
	du = u [ lagx. cosx + sinx ]	V du Slox
	du la x	1 olv = - SINX lag SINX + cotx cosx
	= x SIDY (logx losx + SIDX)	Van
	* ( <del>x</del> )	du=v (cotx cosx-sinx log sinx)
		du l
9.1	A DE LEGISLANCE CONTRACTOR OF THE PERSON OF	dv =(SIDN) Cotx cosx-SIDX   69 SIDX
		ax
	the beauty SIBY	SINY ) + SINY COTY COSX - SINX 109 SIN
Te rest	indy - du + du = x [legy wsx +	6280034687
	44	0200004007



Class	Chapter	
Exercise	5.5/10	

	an adversaria, no just canno
QN0.10	$x^{2} + \frac{x^{2}+1}{x^{2}-1}$
4,1	
	y = x (05x + x2+1)
	1- x2-1
	let U= x close and V= x2+1
	let U= x cose and V= x2+1
	. 24 -14 -14
_	dy = du + du
	Now U= x x tose
	taking lag both stole
	taking log both snote  log u = log ( n x cosx logx
	diff. both sides
	of logue of (x resx logu)
	du du
	u du cosx loga d (20) + x. loga d cosx + x cosadolique
	u dn dn dn dn
	= cosx lagx(1)+ x logx(-510x)+xcosx.1
	36
	using of (www)=
	i du = u (cosselogne - resinne logne + cosse)
	ar.
TE I	= x (cosx logx - x six logx+cosx)
	Now for v= x2+1 [applying countert Rule]
	) xe=1
	du = d   x+1   = (n-1) d(x+1) - (x+1) d (x-1)
	dx dx (x41) (x2-1)2
	- (x2-1)(2x)-(x2-1)(2x) -2x2-2x-2x-2x
TOTAL	(x²-1)² (x²-1)² 6280034687
	12 12 4x + 02 00 1 100 100 100 100 100 100 100 100
	12112



Class	Chapter	
Exercise	5.5/11	

	$\therefore dy = dy + dy$
	dx dx dx
-	= x (05x   co5x   egx - x 510x   egx + (05x) - 4
	= x (x21)2
	The state of the s
No.11	(x cosx) x + (x sinx) 1/2c
38 19	L IN INCUITE CHEINAIN
	let u= prosxxx and v= prsinxjx
	· du -lu · dv
	dy dy de de
	Now
-	U=(x cosx)x
	taking lug both sodes
	Log U = (of x cosx) = x log (x cosx)
	Mill both ander
115	d (logu)= d (x log (x cosx))
	1 du - lagriperidici + 21 d (lagricosa)
	u du = log (21 cosx) d (21) + 21 d (log (21 cosx)
	= log (xcosx)(1) + x: 1 of (xcosx)
	x cosx olx
	Datament . I leaved on a und (nex)
	- log(x cosx) + 1 (cosx d (x) + x d cosx)
100	
	- log (x cosx)+ 1 (cosx(1)+ x(-810x))
	t (Mary or SIDX)
	- log(xcosx) + 1 ((cosx-2csinx))
	LA A A A A A A A A A A A A A A A A A A
	in du u leg(xlosx) + losxxx - 2515x
188	dx ( 6280034687
	= (x63x) [wg(x65x)+1- oclarx] 6280034667



Class	Chapter_	- Designation of the
Exercise	5.5	12

Crack the Con	cepts, No just Exams
	1: (x sinx)1x
	taking ing boly sides
	taking ing both sides  lug v = lug (x sinx)  x
	diffe both sodes
	diff both sides
	d log v = d ( f. ( log(x 510x))
	1 dr = log (x sinx) d (1) + 1 d log (x sinx)
	= log(x sinx)(-1)+1.1 d x.sinxdx
	= -1 log (x sinx) + L. I sinx (sinx dix) + x d sinx)
	= -1 log (4 sinx) + 1 (8 inx(1) + x · (0 sx))
	dv = v [-1 2 log (x 510x) + 1 2 510x [ 510x + x Cosx]
	i. dy = du + du dx dx dx
	= (x cosx) [log(x cosx - x tanx+1)+
	= (x cosx) [log(x cosx - x tanx+1)+  (x sinx)  x [-L log(x sinx)+ L + L cotx]



Class	Chapter	
Exercise	5.5/13	

- 11	
ON0.12	$x^{y} + y^{x} = 1$
	let u= xt
	v= y*
	u+ v=1
	diff. both sides
	du + dv = 0
	Now u= xey
	-laking log bollisides
	log u = log xy
	log u=y log n
	2016. hoth sides
	d logu=d (ylogx)
	du du du
	Lan logn dy + yd logn = dy.logn + y.l
	ude de de de de de
	du = u dy.logx + 4
	ax [ax x]
	= ny [dy. logx + y] = ny dy logx + n.y
	Now V= yx
	Now v= y* taking olog both sodes
	log v = log y = se log y
	diff. both sides
	d (logy)=d (x logy): logyd(x)+x d logy
	obs. a disc and a disc ads a
	1 dr - logy(1)+ x · b - logy + x dy
111	dv = v [logy + x] = y = [logy + x oly] 6280034687
	ax and a



Class	Chapter	
Evereice	5.5/14	
Exercise	5.514	

Crack the	TUTORIAL Exercise 5.5 19 Concepts, No just Exams
	= y2 logy + y2-1x dy
	Now du + dv = 0
	2 dylogx + x , y + y bgy + y . sedy =0
	du du
	dx dx
	dy [ no logn + y + ! x dy] = - [ x y + y eligy]
	dy = - [xd-1y+ yx-legy] Ans
	ox us log x + yx-1x.
NO.13	y== ny
.,,,,,,	taking log both sides
	· log yt = log set
	si log y = y log se
	dith both sides
	d (x logy) = d (y logx)
	logy d(x) = logx dxy + y d logx
- V	+ x d logy
	lugy 0) + xidy = lug x dy + y. te
	logy+ 2 dy = logx. dy + 4 6280034687



Class	Chapter	
Exercise	5.5/15	

Crack the Co	ncepts, No just Exams
	ndy-logedy = y- ye y-logy
	y an ax si y si
	dy [x-logx]= y-xlogy
	du (v. ulax) - y-x ligy
	dy [x-ylogx] = y-x 27 7
	u u l an u last
	: dy = y-x logy y-x logy xy
	Tr - 2 Cogre 2 (4-4 logs)
	7
	In us unlogy A.
	dr ya urlogr
	dx x2-xylogx
a No.14	(cosx) = (cosy)x
	Taking log both sides
	log (cosx) = log (cosy) x
	y log(cosx)= x log(cosy)
	ditti holt sides
	of (y ling (cosx)) - of (x ling (cosy))
	log (cosx) of (y) + y of log (cosx) = log (cosy) of (x)+ x of log(cosy)
	log cosx. dy + y. 1. of cosx=log cosy (1)+x.1 of cosy
	A STATE OF THE STA
	log cosx dy + 4 · (-sinx)=log cosy + x· L (-siny) dy
	Log cosx do - y tanx = log cosy - x tany do



Class	Chapter
Exercise	5.5/16

Crack the Co	ncepts, No just Exams
	dy (log cosx + retary) = log cosy + y tanze
	dy = leg cosy + y tany
	dx logosx+xtany ms
ON0.15	ny = ex-y
	taking log both sides
	taking log both sides log (xy) = log (ex-y)
	log x + log y = (x-y) loge [loge=1]
	log x + log y = (x-y) loge [log e=1] log x + log y = x-y
	dikt, both sades
	of (logx+logy) = of (x-y)
	a logy + of logy = of (4) - of (3)
	ax ax ax ax
	1 + 1 db = 1 - 1 dy
	y dx dx = 1-1 - x-1
+100 P	dy (5+1) - x-1
	3,2 0 2
100	ay (1+4) = 2-1
(4/5)	:. dy - (x-1)x y - y x-1
200	ax (x)(1+3) 2 (3+1)
	1. 4/9-11
	$\frac{dy = \frac{y(x-1)}{x(y+1)}}{dx} = \frac{fms}{6280034687}$
	6280034687



Class	Chapter	TEN IB
Eversise	5.5/17	THE AR

No.16	= (1+x)(1+x2)(1+x4)(1+x8) fend decerative and
	hence f(1)
	We have (0+30+50 ) (8+30+50)
	f(x)=(1+x)(1+x2)(1+x4)(1+x8)
	-laking log boly sides
	(1+x) (1+x) (1+x) (1+x)
177	- Lug (1/x) = tog / 14 x 1 + log (1+x) + log (1+x) + log (1+x)
	diff. but sides    d (f(x))= d (1+x) + d (1+x)
	f(x) dx dx (1+x) + a (1+x) + a (1+x) + a (1+x)
134	= 1 d (1+x) + 1 d (100) (1+x2) + 1 d (1+x4)
	1+x dx Axe dx 1+x dx
	+ 1 of (1+x3)
	- 1 · 1 + 1 · 2x + 1 · 4x <sup>3</sup> + 1 · 8x <sup>7</sup> 1+x   +x   +x   +x   +x     +x
16	i. d f(x) = f(x) 1 + dx + 4x3 + 8x7 ] dx   1+x   1+x2   1+x4   1+x8 ]
-	= (1+x)(1+x)(1+x)(1+x) [+x+ 4x + 4x + 8x]
	The state of the s
	Now putting x=1
	-1 + (1) = (1+1)(1+1) (1+11) (1+11) (1+11) (1+11) (1+11) (1+11) + 8(1) + 8(1) + 1+11) (1+11)
	The second of the least of the
	= (2)(2)(2)(2) = + = + = + = = = = = = = = = = = = =
-	- 16/1+2+4+8] - 8×15=18b
	2
	(1) = (30) Ms 6280034687



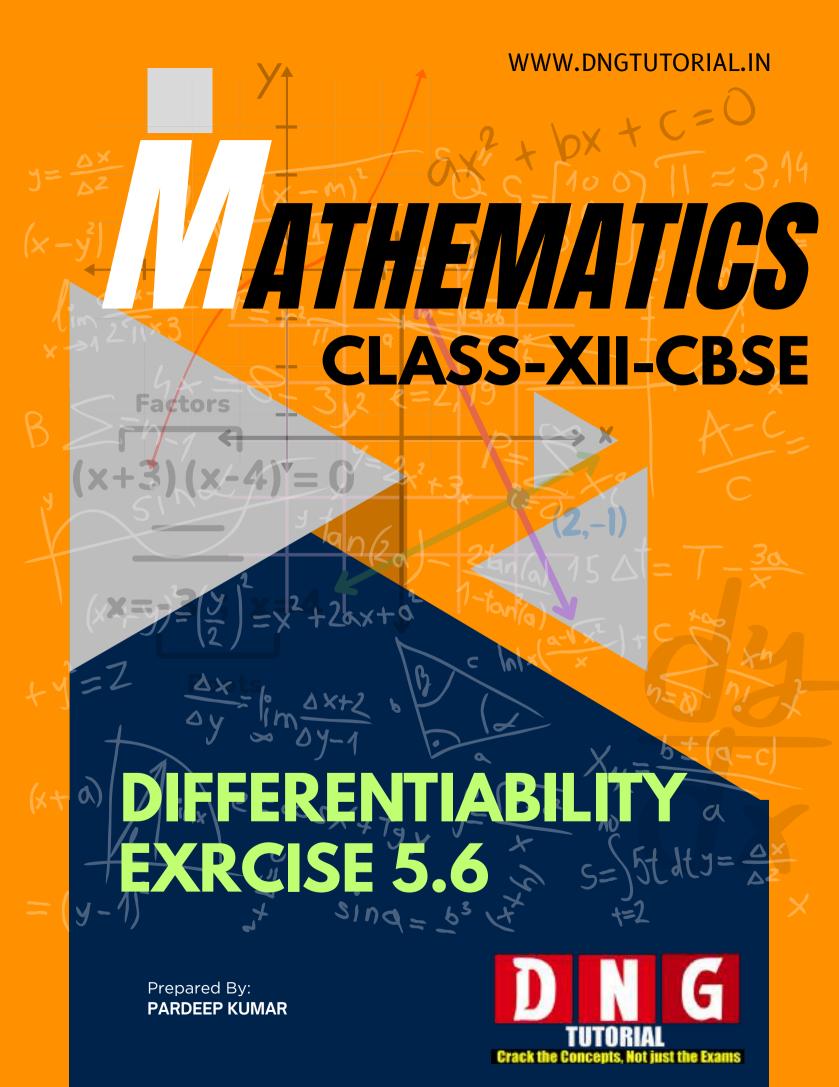
Class	Chapter	
Exercise	5.5/18	

ON0.17	y=(x2-5x+8)(x3+7x+9)
	Using peroduct formula
	0 '
	y=(x=5x+8)(x3+7x+9)
	طعد لما دعاء
	dy = d (x2-5x+8)(x3+7x+9)
	dx dx
- Ju	= (x3+7x+9) d (x2-5x+8)+(x2-5x+8) d (x2+7x+9)
	= (x3+7x+9) (2x-5)+ (x2-5x+8)(3x2+7)
	= 2x + 14x + 18x - 5x3 - 35x - 45 + 3x - 15x3 + 24x 2
	+72=352+56
- Appr 1	- 5x4-20x3+45x2-52x+11
(11)	by expanding
	y=(x2-5x+8)(x3+7x+9)
	= x5-5x4+8x3+7x3-35x2+56x+9x3-45x+72
	y=x5-5x4+15x3-26x2+17x+72
	ditt but ender
	dy = d (x5-5x4+15x3=26x2+114+72)
	= 5xy-15x3+45x2-5ax+1) Pms
111)	to find dy by logarihmic function.
	y=(x2-5x+8)(x3+x+9)
	taking log both sides
10.70	ligy = lig[(42-5++8)(43+74+9)] 6280034687 = lig(x2-5++8)+lig(43+74+9)
	= lugar = 5x+8)+lug(x3+74+9)



Class	Chapter	
Exercise	5.519	

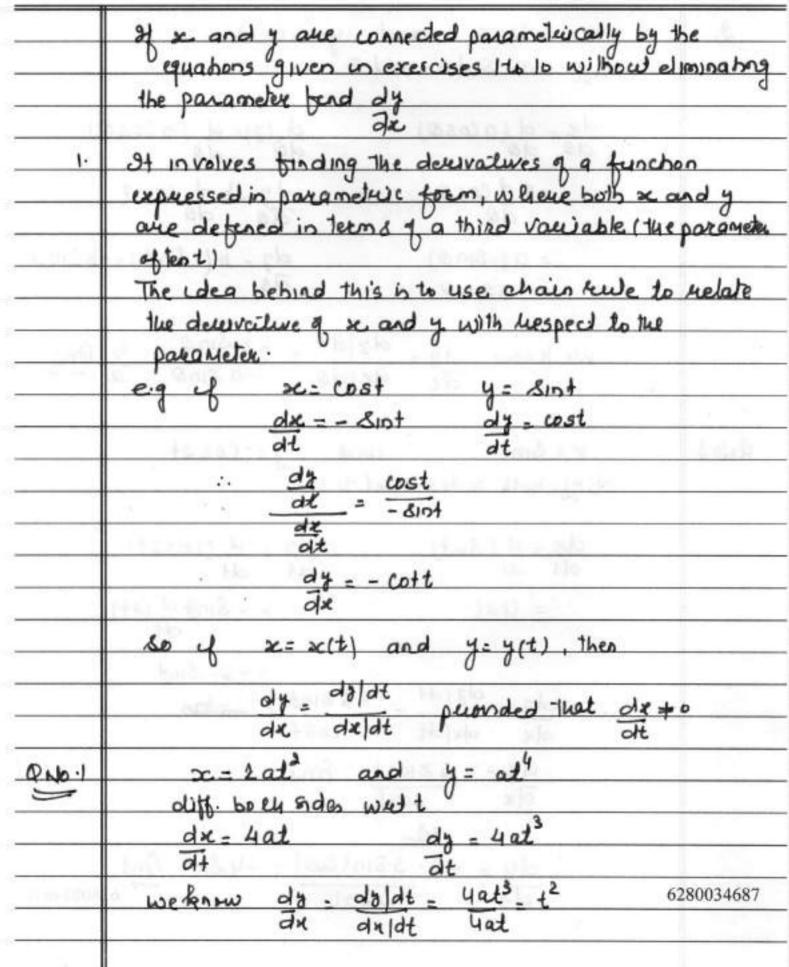
Grack tr	a Concepts, No just Exams
	du lagy
	dr. logy= of log(x2-5x+8)+log(x3+7x+9)]
	वं विष्
	6 ds = d log (x=5x+8) + d log (x3+7x+9)
	G dx = d log (x=5x+8) + a log (x=7x+9)
	1 db = 1 d(x25x+8)+1 d(x3+7x+9)  8 ax x8-5x+8 ax x3+7x+9
	+ dy - 1 (2x-5) + 1 (3x-7)
	g de x≥5x+8 x3+7x+9
	4 db = (2x-5)(x27x+9)+(3x27)(x25x+8)
	1 dy = (2x-5)(2+1x+4)+(3x+1)(x-3+1x+9)
	(22-3-10)(-2-3)
	+ dy = 2x4+14x3+18x-5x3-35x-45+3x4-15x3+24x8 0 0x +7x3+35x+56
-	(x2-5x+8)(x3+7x+9)
	(x2-5x+8)(x3+7x+9) (5x4-20x3+45x2-52x+11)
	. 44 . 9
	1) dx = (x2-5x+8)(x3+7x+9)
	= (x2-5x+8)(x3+7x+8) (5x-20x+45x-52x+11)
	[x25x+8)(x3+7x+9)
	= 5x4-20x3+45x2-52x+11
	We can say that the value of dy is same using three
	different method:
	V.V.





Chapter: Continuity and Differentiability

Exercise: 5.6/ /





Chapter: Continuity and Differentiability Exercise:5.6/\_\_\_\_

٥	u - a from and u I from
2	n=a coso and y=b coso
End-com	diff. both Sides was a
	1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	dx = d (a coso) d:(3) = d (5 coso)
21 64	= ad coso dy = bd coso
books	THE COURT WAS COMED IN COME AND ADDRESS OF THE PARTY OF T
	= a (-sino) dy = b (-8ino) = -bsino
dalas	= -asino do
+5	weknow dy - dy da = - b sind = b Any
	de de do -asino a -
QN03	x= Sint and y= cosat
	diffi both sides well t
	dx = d(8int) $dy = d(cosat)$
	$\frac{dx = d(8nt)}{dt dt} \frac{dy = d(cosat)}{dt dt}$
	= cost = -810 + d(a+)
	at
	= - 2. 5107
	dy = dy dt = -2 S10x = - + + + + + + + + + + + + + + + + + +
	dx dxidt cost
	dy = - 28102+ Ams
	dx cost
	82
100	
	dx _cost 6280034687



Chapter: Continuity and Differentiability Exercise: 5.6/3

Crack the C	encepts, not just the Exams	
ON0.4	de to the sides went to de de de la contraction	10 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.
	diff. both Sides went t	T Alabama and the same and the
	dx = d (4t) d	y = d (4) = d (4t-1)
	वर वर्ष (५६) व	it at at
	= 4×1=4	= 4 d (t-1)
	s be a lin hill ice of the leave	at
	ab ab	=4(t-2)=4 +2
	The state of the s	t2
	. dy = dy dt = -4/t	
	dx dx ldt 4	= -! t2
	44 42140	303 24 31 22 2
	Dolla Day	SEDILS - CO
DN0.5	x = coso - coseo	y = sin0-sin20
	ality both Rides wed 0	10 10
0.8	521 - 1 6 FW 3 6 4 8 6 7 5	
01/30/0	dx = d (coso - coseo)	dy -d (SINO-SINZO)
	90 90	
	= d (coso) - d (coseo)	= d (sino) - d (sinzo)
	do do	d0 d0
	= - 8100 - (-Sinzo) d (20)	- coso- coseod 20
	do	āo
- 6	= -2 - SINO + SINEO .2	= coso - 2 coseo
	= 2. 81020-d100 ->i	= COSO - 2 COS20
	= 2.9 8100 coso - 8100	-> (ii)
		14 - 3
	= 8100(4000-1)-311)	
	of we use (i) and (iii)	são me
	dy = doldo - coso-2005	
	ax axldo asinzo-s	A SHOOM AND A SHOO
Copylet Stuff	of we use ii) and (iii)	6280034687
	da - coso-acosao	Amy
	de Ema(ucoso-1)	



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.6/4

DNO.6	diff. boly sides wed. o	y= a(1+ coso)	
	Taraba 194 barra	and the sale	
	dr do (a(0-8100)	dy -d a (1+ coso)	
	= ad (0-Sino)	= a [ d (1) + d (wso)]	
	= a (d(0) - d(sino))	= a [ - 81no]	
	= a[1-1050]	=- a &100	
- 2	dy = dyldo = -asir	00 = -81no	
QN07	_ a sin	(1-650) 0/2650/2 = 650/2	
	$=$ $ \cot \theta$	81020/2 S100/2	
	Note ( Cos20 = cos20 - 810		
	Cosa = 1 - 2 sine	Ole Sineo= asinocoso	
	$2 \sin^2 \theta = 1 - c \theta$		
	x = 510\$t	assakak -	
	Cosat	datumsk =	
	diff. both sides well t		
	dx = d / sin32 \ - d	(Sint)3	
	at ax Jusat di		



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.6/

	$n = \sin^3 t \qquad y = \cos^3 t$
	Tusat Tusat
	x = 81031
	2C = 810-1
	Jusat
	all to both sides will t
	dx - d   SIn3+ ) - d (SIn+)
	at at losset at losset
	- Itosald 1 sint 13 - sin3t d Jusat
	dx = d (SIn3t) - d (SInt)3  at at (Icosat) at (Cosat)  = [cosat d (Sint)3 - Sin3t d (Cosat)  at at (Sint)3 - Sin3t d (Cosat)
	( cosat)a
	1 (100)
	= I cosat 3 sinet d sint- sin3+. 1 d cosat
	dt alcosat dt
	(Jcosst)
	= 3 5102+ cost 1 cosat - 5103+ . (- 8102+) of (2+)
	2 Josat dt
-	the state of the s
	cosat sinat sinat of
	= 3 sin2t cost · [cosat + sin3t . Sinet &
	alcosat
	cosat (LCM)
	= 3 3102+ cost. cosst + 81034.2810+ cost
	FAIDEN
	Cosat. Cosat = 251020
-	= 8102+ Cost (3 sent cosat+ 2 sin2+)
	(tosat)3/2
	dx = sin2 (0st (3 cosat +2 sin2+)
AUL 003	ور المام الم
	(cos a+)3/2 6280034687



Chapter: Continuity and Differentiability Exercise: 5.6/

- 1	
	y = <u>cos³t</u>
	Tosat
	oliff. both sides wed t
	dy - d 11053+ 7 d 1105+3
	dy = d [ (DS) ] = d ( (DS) ) dt TOSSI
	17-121 1 10-14 3 (12-14) d 17-12+
	- Jusat d (cost) - (cost) d Jusat
	1500012
	Tongs of english total a direct
	= Josan 3(-603t) d cost - cost dx
	(Joset)2
	= 3 cost (- 8int) (cosat - cos3t , (- sinet) of (2t)
	a cosat at
	(J cosat)
	= - 3 sint cost / cosat + cos3t. sinet. &
	Polace Polace SJusan
1 12	(1 (nspt)2
450	= -3 sint cost (cosst + cos3+ . a sine cost
	Jusat
	(J cosat)a
	= -3 sint cost- cosat + 2 sint cost
	# E   127 -   - 3:48   E   1   1   1   1   1   1   1   1   1
	(Cosat (Losat)
	= Sint cost (-3 cosat + 2 cos2+1)
	(Jusat) 3/2
Throughout p	6280034687



Chapter: Continuity and Differentiability
Exercise: 5.6/2

	dy = dyld+ ax dxldt
	ax axlat
	= Sint cost (2 cost - 3 cos at)
	(Losa+13/2
	sin2 wst (3 cosat+2 sin21)
	- (cos2+)3/2
- 1	Sint ( 20052+ 30052+)
	dn = lott. / 2003+- 3005 at )
	ax (3cosat+asin2+)
- 1	= cott/2cos21-3(2cos21-1)
	3(1-251n2+)+251n3+
	= cott   2 cost-6 cost+3 ]
	3-65102+251021
	$= \cot \left[ \frac{3 - 4 \cos^2 4}{3 - 4 \sin^2 4} \right] = \frac{\cos t}{\sin^2 t} \left[ \frac{3 - 4 \cos^2 4}{3 - 4 \sin^2 t} \right]$
	= 3 cost- 4 cos3+ = - (4 cos3+-3 cost)
	3 sibt - 4 sin3t (3 sint-4 sin3t)
	$= -\left(\frac{\cos 3t}{6103t}\right) = -\cos 3t$
*	is dy = - cotst my
1.042000	6280034687



Chapter: Continuity and Differentiability Exercise: 5.6/8

8.0NO	n = a(ust + ugtant); y = a sint
	let x = a (cost + logtant)
	diff. both sides wet t
	d(x) = d (accost + log topt)
	dx = ad (lost + log tant)
	= a d (cost) + d leg tan t
	= a [- 810+ - d (tan t) tan t ar
	= a[-810+ 1 . sec2+ d t tant 2 d+ 2
- 0.0	Charles Tourist Control of the Contr
	= a [-810+ + . sect ( )]
	= a [- 81nt + cost 2, 1 . 1 ]
	= a [- 8101 + 1 2 sint. cost/2]
	= a [- &In+ + 1 ] = a [- &In+ + 1 ]
	= a [ sint ] = a [ 1-81nt] = a cost
	= a cost
ZHIT	SID# 6280034687



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.6/\_9

	y = a sint		
	diff both sodes wed to t		
	dy = d (a sint) dt dt		
	at dt		
	= a d (810+) = a cost		
	dt		
	: dy = dy dt = accost x sint = sint		
	: dy = do dt = acost x sint = sint dx de dt a cost cost		
	= tent		
	dy = tant ms		
	are and the Directoria		
QN0.9	n = a seco y = b tano		
	diff. both sides wed o		
	I self in the self		
	de de (a secro) = a d seco = a secotano		
	d0 d0 d0		
	y = btano		
	deff. both sides wed 0		
	dy: d (btano)		
	10		
1.7			
	= b d tano		
	= b seco		
1,4112	· Julda adacatam - an an		
	dy de de la breco tono a ano x soso		
083	de de al breto 6280034687		
	= a sino		
	P		



Class\_\_\_Chaptér\_\_\_\_ Exercise\_\_S.6 //O

	dy = dy do = b seco = b seco = coso
	dy = ablac - b seco = b seco x coso  dx dxldo a secotano a sino
	- 5 1 x cos0 - 6 x L - 6 8100 a coso 8100 9 5100 a 8100
	= 5 cosecco.
QN0.10	x = a ( loso + o sino); y = a ( sino - o coso)
	501: x=a(coso+osino)
4	diff. both sides well o
	de de la (Losa + o sino)
	= ad (cosa+osino)
	do
	= a [ d coso+ d osino]
	= a [- Sino + d sino d (0) + 0 d sino]
	= a [- 8100+[ S100(1)+ 0.(WS0)]
	= a [- 8180 + 8100 + 0.coso]
	= a. O. 600
Shall I	Now
2.3	y = a ( 8100 - 0 coso)
	oliff both sides well a
To	dy = d (a (sino - ocoso) 6280034687



Class	Chapter	
Exercise	5.6/11	

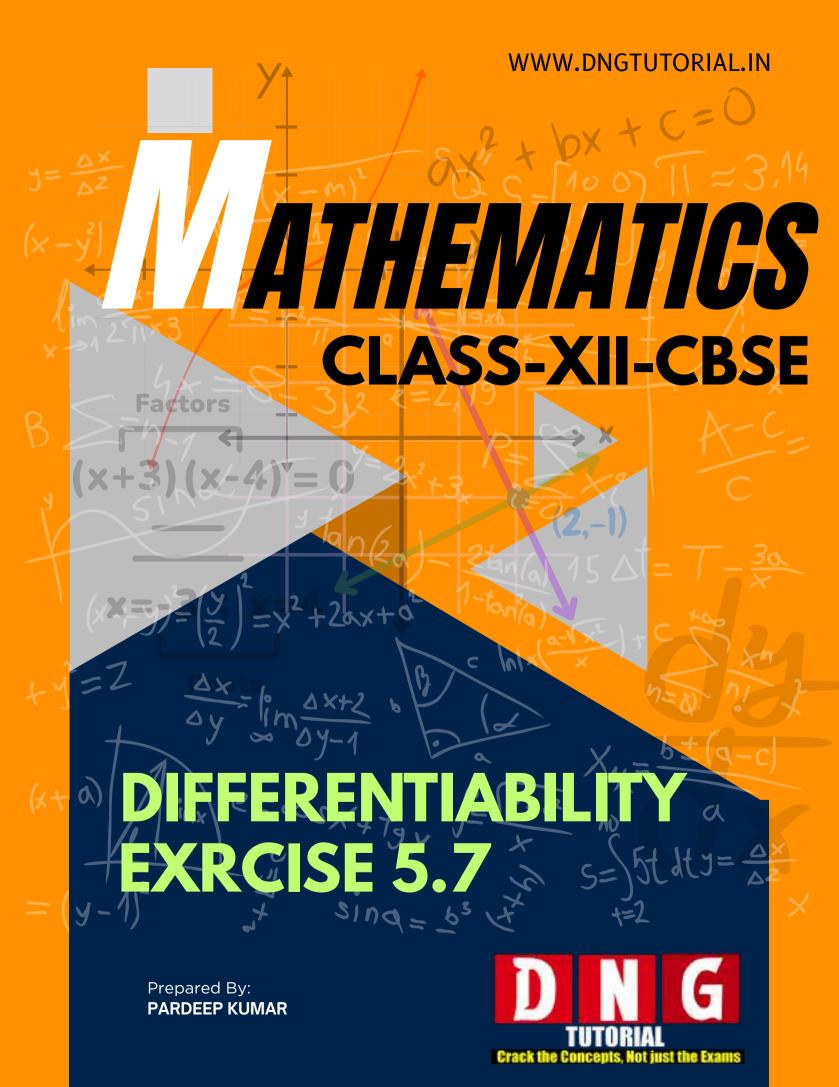
Crack	the Concepts, No just Exams
101-3	dy = a [d sino-d a. coso]
	- a [ insp- ] inspection - ped insp)
	= a \ \(\text{uso} - \) \(\text{usod} \(\text{(0)} + 0 \) \(\text{do} \) \(\text{do} \)
	= a [ coso - (+) cosa - o (-sino))
	= a [ cos/0 - coso + 0 sino]
1050	THE RESIDENCE OF STREET OF STREET STREET, STRE
	= a (0 SIn0)
	Jul 10 0 0 0 10 0
	dy - dyldo = a.osino = sino = tano
	an duldo ar coso coso
	dy = tana ams
	dx distribution
	Take the second
a No.11	of x = lasin-1t and y= lacos-1t
	show that dy = -4
	ax x
	Sol: x = \asin^1t
	diff. both sides wet t
	dx = d / asin-it)
	d+ -lv /
	sin't
	21 smile dx - 1 asint pread smile
	= 1 d a sint  = 1 a a sint  2/asin-it dx = 1 a a a a sint  2/asin-it dx a a a a a a a a a a a a a a a a a a
	= 1 . asin-1t . 1 . loge
	2 a sin-t
	2/08/07/12



Class	Chapter	110
Evereise	5.6/19.	

- 1	(asir	-1+ )2	1	. 1	-90
2	6	- SE	JI-t	2	9

$$\frac{1}{\sqrt{a^{sin^{-1}t}}} = \frac{y}{x}$$





Chapter: Continuity and Differentiability Exercise:5.7/1

	ONO:1 12+3x+2
	501: led y=x2+3x+2
	: dy = d (x2+3x+2) = 2x+3
	dx dx
_	again diff. bolk sodes
	$\frac{d^2y}{dx^2} = \frac{d^2}{dx^2} \left( 2x + 3 \right) = 2$
	dx = a ms.
	٥١٥٠٥ ملاه
	Sol: dy = xdo  : dy = &o k!9
	: dy = 80 k <sup>19</sup>
	d'e
_	otits. again both sides
	d2y = d2 (20x19) = 380x18
	: dey - 380 x18 Pms
	& No.3 2. Cosx
	y= xe.cosx
	dy = d (x.cosx) - cosx d (x) + x (d.cosx)
	= (05x + x(-&10x)= cosx-x sinx 6280034687



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.7/2



diff. again both sides
dre dre (cose-resine)
= d2 (cosx) - d2 (x sinx)
= -810x - [SINX d2 (x) + x d2 (810x)]
= -811x - [811x+x cosx]
= - Sinx-Sinx+xcosx
= - & & 17x - x LOSX
:. d2y = - (2510x + x (05x) my
ONO.4 logx
diff. both sides
dy = d (log x) = 1
again diff. both sides  dig - di (1) 1  dire dire (x) - xe
: dey1 fond    dx2 x2   fond
62800346



Chapter: Continuity and Differentiability Exercise: 5.7/ 3

DN0.5	23 logx
let	y: x2 logx  J. bolh sides
اناه	7. bolh sides
	dy - d (x3 109x)
	dx dx C
	- logx dx3+x3d logx
	Control of the contro
	= logx 3x2 + x3.1 = 3x2 logx + x2.
No	w again diff. both sides
	dre dre (3 melogn + x2)
	due due
	= d2 (3x2 logx + d2 (x2)
	dx5 dx5
	= (logx d2 (3x2+ 3x2d2 logx) + 2x
	dus dus
100 1 2 2 B	By open to be the the same
	= [6x. logx + 3x2. 1]+2x
	= 6x. logx + 3x + 2x
	= 6x. logx + 3x + 2x = 6x. logx + 5x
	dey = 6x. logx + 5x Pons
	due 1
	628003468



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.7/4



	QN0.6 ex SID5x
	led y- exsinsx
	alith both sides
	dy = d (exsinsx)
	= sinsx d ex + ex d (sinsx)
	= ex. 8insx + ex (055x d (5x)
	= ex sinsx+ ex cossx.5
	= ex sin5x+5ex cos5x
_	diff. again both sides
	d29 = d2 (exsinsx + 5 ex cos 5x)
	= d2 (e"5155x] + d2 (5e5 cos 5x)
	= SINSX d2 (ex) + exd2 (SINSX) \$ (cos 5x d2 sex + ax2 (SINSX) \$ (cos
	र्वभ2
	= sin5x ex + ex. cos sxd sx +5 [ex cos 5x + ex (-s)
	= exsinsx + ex cos 5x (5)+5 [ex cos 5x - 5ex 5125x)
	= = ex sinsx + 5 ex cos 5x + 5ex cossx - 25ex dins
	= 10 ex cos 5x - 24 ex 5105x
	: dy = 20x (5 cos5x -12 sin5x) (mg
	- 6280034687



Chapter: Continuity and Differentiability Exercise: 5.7/5



	QN0.7 e6x cos 3x
	10) 4 - p6 te Cos 3 te
	1 -1:4 hath Sades 420 de que
	dy: d (es cossu) = cossuder + exd cossu
	dx dx dx
	= e68d (6x). cos3x + e6x (-sin3x) d (3x)
	94
	= e 6x 641. COS3x - e SIN3x(3)
	, 6ebe cossx - 3 ebx sin3x
	again ditt. both Ander, we have
	dey = d2 (be. cossx-3e6x sin34)
	dre dre
	= cos3xd2 16e c) + 6e [d cos3x-3 de . sin3x
	= (053×d2 (6e6x) + 6e (d (053×-3 (d e6x d)n3x)
	= 6 e x cos3x d 6x + 6e x (-spx 3x) d (3x)-3 e x d 6x d 6x d x d x d x d x d x d x d x
	dx 8 - 3x + 86x d (5103x) d (3x
	= 6 e. COSSX × 6 x + 6 e /- 60 63 x 1 (3)
	= 6 e. (0,33 x × 6 x + 6 e (-50 x 3 x) (3) - 3   6 e x sin3 x + e x (1053 x) (3)
	= 36 € COS3x -18 € SPB3x - 18 € SID3x -9 € COS3x
	= 27 e ws3x - 36 e sln3x
	= 9 e6x (3 cos3x -4 sin3x) Pons
n/a/let	6280034687



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.7/6



QN0.8 -195'x	
el y-190'x	
dy - d (tan'x) = 1 dx dx dx 1+x2	-
dy = d (tasix) = 1	_
Now again dutto both sides	-
den = de (1)	
= (1+x2) d2 (1) - 1 d2 (1+x2)	
and the second s	
(1+22)2	
= (1+22)(0) - (1)(d2 (1) + d2 (x2))	
axe dxe	
(1+x2)2	
= -1 (0+2×2)	
$\frac{1}{(1+x^2)^2} = \frac{-2x^2}{(1+x^2)^2}$	
(1+4E)2 (1+4E)E	
: dey222 Ams	
: dey2x2 Ams	
QNO.9 log/logx	
0. 4	
y = log (log re)	
diff. both sides	
dr - d (log (log x) = 1 d (logx) = 1 . 1 =	re light
Annual	280034687
ze. lugze	



Class: XII
Chapter: Continuity and Differentiability
Exercise: 5.7/2

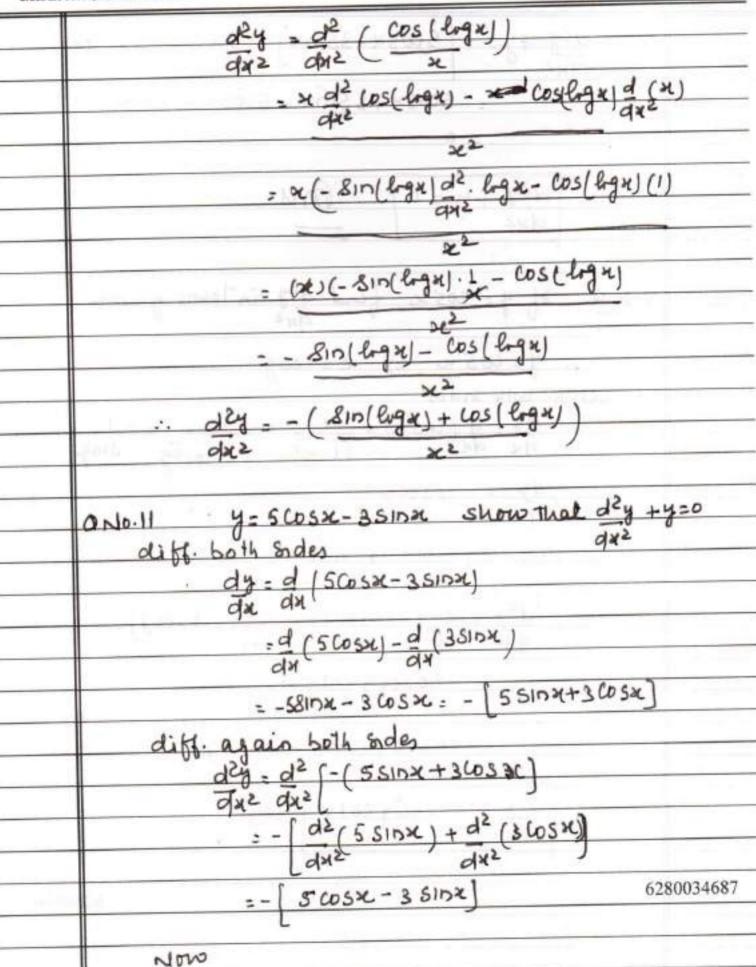


	Now again diff. both sides.
	dre dre ( 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1
	= x. logx d (1) - (1) d (x. logx)
	= x logx (0) - 1 [x d logx + logx d (x)]
	= -1 x x 1 + logx (1)
	= -1 (1+ logx 7
	= -1 [1+ lo-g x] (2e lo-gx)2]
	: dey = - (1+logx) (x logx)2
	ONO. 10 Sin (log x)
	diff. both Ades, we get
	dy - d (Sin(lagu)) = cos(lagu) d lagu du = cos(lagu) + 1 = cos(lagu) = cos(lagu)
	= cos(logn) + 1 = cos(logn)  Now diff. both sides again
34687	24 - d² (cos (l·g*) → 1)  6280034687



Chapter: Continuity and Differentiability

Exercise:5.7/8





Chapter: Continuity and Differentiability
Exercise: 5.7/9

	= -5605x+3510x+5605x-3510x
	= 0
7.	diy + y = 0 Ams
DHOR	of y = cos'x find dey in leans y alone
	y = cos' = = = cosy
ناه	56. both sides
	dr. d (105/2) = -1 = -1 = -1  dx dx dx \[ \int_{1-22}
	du encoru
	dy = - cosecy
- 1	diff. again both sides
	$\frac{d^2y}{dx^2} = \frac{d^2}{dx^2} \left( -\cos e c y \right) = -\frac{d^2}{dx^2} \left( \cos e c y \right)$
	= - cosecy coty dy
	= - cosecy coty (-cosecy)
· .	dy = cosecy coty. And



Class: XII Chapter: Continuity and Differentiability Exercise:5.7/10



ack the Concepts, Not just the Exams	244,112.1 R 6
DND:13 8	y= 3 cos (logz) + 4810 (logz)
Then	and x2y2+ xy1+y=0
11100	02 0
4-20	05(logz)+481n(logze)
dub. Soth	sides, we get
dy	d (3 cos(logx)+48n(logx))
No	1
	d (3 cos(legx) + d 48n(logx)
3	3 (- Sin (log) d logx + 4 cos (logx) of logx
16 L. J. G. 140K.	-3810(logx). L+4105(logx). L
Now if	y= x [-3810[logx]+4 cos(logx)
*	
36 3m 2 v	= 4cos (logx)-3sin(logx) -> vis
104 + W - W	3 4003 (00) - 1 0
Now we !	need serys
dut	6. both sodes of (i)
19	
ay,	
da	
d	(2(xy))= d2 (4(05(logx)-3510(logx))
da	Sr dns
4 2 4 4 4	de (4) = de (4(05(lugz) - de (3 sin(lugz))
anz	طع (الم) = طع (الدوه (الموعد) - طع (ع مم الموعد))
	= -481n(lugz). 1 - 3 cos (logz). 1
×4+4	
5010 11	= -4 Sin (light) - 3 cos (light) 6280034
seg + y	
22 /2 to	og = - 4 sin(logse)-3 cos(logse)



Chapter: Continuity and Differentiability

Exercise:5.7/11



-			,	*) + 3 cos			
	2242+	×7=-7					
		+ 24+	20		Mark.		
				W. 1 - 4 x 2 x	Lips d		
QN0.	4 8	y : Ae	+Be7	e, show	that		
1	V	dey	-(m+n	dy + m	114=0		
1				ope	U		
	we h	owe ~	W 44				
			1x+Betz		-		_
-	detto. 5	ooth side	2.116				
1	- 4	dy - d 1	A emx + B	enx)= d	Aemx)+s	Ben	×
-	- 1	die one	Out	dar	, ,	P	
1		= Ae	mx d mx	+ Benza	a mac		
1							hy
-			mx m +	Car a recorded		m + B	e'.
		= Ag	347 m 182	2	4	_	
No	w deg	= d2	Aeme (Aeme	m + Be"	(n)		
	971-	ax.		ער או	o 1124.		
-		= d2	(Am.e	) + q= (	Bn.e.		
		GA.	-12 MM	94	12 -n	×.	
-		s An	nd2 emx	+013	7.01- E.		
LYTTE	LOCH _						
		= 911	n.emx. n	1 + 57.	e". 4		
		= An	n.e.+	おかと			
No					15.3		
	173 - (	m+n) di	+ mny			6280	03468
+	1 2 - M)	2 1730	- (m+n)(	1 - CENE	י יאלי		



Chapter: Continuity and Differentiability
Exercise: 5.7/\_\_\_\_\_\_\_



Crack the C	STORIAL Exercise 5.77	
	= -Bnme - Amne + mny, = -mn(Benz + Aemx) + mny = -mn(y+mny) = -mny	
	= -mn/Benz+Aemz + mny	
	= -mn(y)+mny	
	= -m/y+m/y =0	
	hence puoved	
	6280	034687