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	Formulae And Results
Þ	Tsigonometric Identities And Formulae:
	(1) $\cos^2\theta + \sin^2\theta = 1$
	(2) $\sec^2\theta - \tan^2\theta = 1$
	(3) $\csc^2\theta - \cot^2\theta = 1$
-	$(4)  \sin 2\theta = 2\sin \theta \cos \theta$ $= 2\tan \theta$
	1 + tan 0
100	(5) $\cos 2\theta = \cos^2 \theta - \sin^2 \theta$ = $2\cos^2 \theta - 1$ $\longrightarrow 1 + \cos 2\theta = 2\cos^2 \theta$
	$= 1 - 2\sin^2\theta \longrightarrow 1 - \cos 2\theta = 2\sin^2\theta$ $= 1 - \tan^2\theta$ $1 + \tan^2\theta$
	$(6)  \tan 2\theta = 2 \tan \theta$ $1 - \tan^2 \theta$
•	(7) sin30 = 3sin0 - 4sin <sup>3</sup> 0
	$(8)  \cos 3\theta = 4\cos^3\theta - 3\cos\theta$
	$(9)  \tan 3\theta = 3 \tan \theta - \tan^3 \theta$ $1 - 3 \tan^2 \theta$
	(10) $\cos(-\theta) = \cos\theta$ , $\sin(-\theta) = -\sin\theta$
	$tan(-\theta) = -tan\theta$ , $cot(-\theta) = -cot\theta$
	$sec(-\theta) = sec\theta$ , $cosec(-\theta) = -cosec\theta$
	(11) $sin(\alpha+\beta) = sin\alpha cos\beta + cos\alpha sin\beta$
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(12)	$sin(\alpha - \beta) = sin\alpha cos\beta - cos\alpha sin\beta$
(13)	$\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$
(14)	$cos(\alpha-\beta) = cos\alpha cos\beta + sin\alpha sin\beta$
(is)	$tan(\alpha - \beta) = tan\alpha - tan\beta$ $1 + tan\alpha tan\beta$
(16)	$tan(\alpha+\beta) = tan\alpha + tan\beta$ $1 - tan\alpha tan\beta$
(17)	$2\sin\alpha\cos\beta = \sin(\alpha+\beta) + \sin(\alpha-\beta)$
(18)	$2\cos\alpha\sin\beta = \sin(\alpha+\beta) - \sin(\alpha-\beta)$
(19)	$2\cos\alpha\cos\beta = \cos(\alpha+\beta) + \cos(\alpha-\beta)$
(20)	$2\sin\alpha\sin\beta = -\cos(\alpha+\beta) + \cos(\alpha-\beta)$
(21)	$sinc + sinD = 2sin\left(\frac{c+D}{2}\right)cos\left(\frac{c-D}{2}\right) :$
(22)	$sinc - sinD = 2 cos\left(\frac{c+D}{2}\right) sin\left(\frac{c-D}{2}\right)$
(23)	$cosc + cosp = 2 cos\left(\frac{c+p}{2}\right) cos\left(\frac{c-p}{2}\right)$
(24)	$cosc - cosD = -2sin\left(\frac{c+D}{2}\right)sin\left(\frac{c-D}{2}\right)$
(25)	$si\bar{n}'x + co\bar{s}'x = \frac{\pi}{2}$
(26)	$t_{4\overline{n}} = t_{2} = t_{2}$
(27)	$se\bar{c}'x + cose\bar{c}'x = \frac{\pi}{2}$
(28)	$sin^{-1}(-c) = -sin^{-1}c$
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(30)	tanic	(-20) =	- tan	100					
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	$\theta$ °	0	30	45	60	90	180	270	360
	·O <sup>R</sup>	0	<u>T</u>	끂	<u>IT</u>	포	π	<u>311</u> 2	217
_									
	sino	O	1/2	1/2	<del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>	1	0	-1	0
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	tan 0	0	<del>1</del>	,	. 43				
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(1)	d ( or	17 - 2	71-1			٥			
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(1)	dx (x	$rac{1}{r} = r$	1 20			0	·		
		o				0			
	$\frac{d}{dx}\left(x^{2}\right)$	o				0	·		•
(2)	dx (10)	9x) =	] 3C			0			•
(2)	dx (10)	9x) =	] 3C						
(2)		9x) =	] 3C			•			
(2)	d (10)	9×) =	<u>1</u> 3c			•			
(2)	dx (10)	9×) =	<u>1</u> 3c						
(2)	d (10)	9×) =	<u>1</u> 3c						
(2) (3) (4)	$\frac{d}{dx} \left( \frac{dx}{dx} \right)$ $\frac{d}{dx} \left( \frac{dx}{dx} \right)$	$(e^{-x}) = e^{2x}$ $= e^{2x}$	loga						
(2) (3) (4)	d (10)	$(e^{-x}) = e^{2x}$ $= e^{2x}$	loga						
(2) (3) (4)	$\frac{d}{dx} \left( \frac{dx}{e^x} \right)$ $\frac{d}{dx} \left( \frac{e^x}{e^x} \right)$ $\frac{d}{dx} \left( \frac{e^{x}}{e^x} \right)$	$\frac{g(x)}{x} = e^{2x}$ $= e^{2x}$ $= e^{2x}$ $= e^{2x}$	loga cosoc						
(2) (3) (4)	$\frac{d}{dx} \left( \frac{dx}{dx} \right)$ $\frac{d}{dx} \left( \frac{dx}{dx} \right)$	$\frac{g(x)}{x} = e^{2x}$ $= e^{2x}$ $= e^{2x}$ $= e^{2x}$	loga cosoc			0			

$\frac{d}{dx}(\tan x) = \sec^2 x$
(8) $\frac{d}{dx}(cotx) = -cosecx$
(9) $\frac{d}{dx}$ (secon) = secontanon
(10) $\frac{d}{dx}$ (cosecx) = - cosecx cotoc
(10) In Cost of 2 = 2050000

$$\frac{(11)}{dx}\frac{d(\sin^2 z)}{\sqrt{1-zc^2}}$$

$$\frac{(12)}{dx}\frac{d(\cos^2 bc)}{\sqrt{1-c^2}} = -1$$

(13) 
$$d\left(\tan^2 x\right) = 1$$
 $1+x^2$ 

(14) 
$$\frac{d}{dx} \left( \frac{co+2c}{2c} \right) = -1$$

$$\frac{(15)}{\text{doc}} \frac{\text{d} \left(\text{sec}^{1}\text{sc}\right) = 1}{\text{loc}\sqrt{\text{sc}^{2}-1}}$$

(16) 
$$\frac{d}{dx} (\cos \sec \frac{1}{2}) = -1$$

(17) 
$$\frac{d}{dx}(\sinh x) = \cosh x$$
,  $\frac{d}{dx}(\cosh x) = \sinh x$ 

(18) 
$$\frac{dx}{dx}(uv) = u\frac{dv}{dx} + v\frac{du}{dx}$$

(19) 
$$\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$$
  $\frac{d}{dx}\left(\frac{i}{v}\right) = -\frac{1}{v^2}\frac{dv}{dx}$ 

Tr.	Integral Formulae:
	(1) $\int x^{\eta} dx = \frac{x^{n+1}}{n+1} + c ,  n \neq -1$
	71t1 + C , 71 + -1
	(2) $\int \sin x  dx = -\cos x + c$
	3
•	(3)
	(3) $\int \cos x  dx = \sin x + c$
	(4) $\int tanox dx = logisecx( + c$
	(s) $\int cotx dx = log  sin xc  + c$
	(6) $\int \sec x  dx = \log  \sec x + \tan x  + c$ .
	(7) $\int \cos e c x  dx = \log  \cos e c x - \cot x  + C$
	(8) $\int sec^2x  dx = \tan x + c$
	(9) $\int \cos c  dx = -\cot x + c$
•	(1=) $\int secx tanoc dx = secx + c$
	(11) $\int cosecox cotox dx = -cosecox + c$
	$(12) \int e^{x} dx = e^{x} + c$
	200
	$(13) \int a^{x} dx = \frac{a^{2}}{1099} + c$
	(14) $\int_{2c}^{1} \frac{1}{4a^{2}} dx = \frac{1}{4a} + \frac{1}{4a}$
	Jot + 9 9 (4)
.	(15) $\int \frac{1}{x^2 - a^2} dx = \frac{1}{2a} \int \frac{\log  x - a }{ x + a } + c$
	$\int x^2 - a^2 \qquad 2a \qquad \sqrt{ x+a }$
	$\frac{16) \int \frac{1}{6^2 - x^2} dx = \frac{1}{29} \frac{\log  a + x }{4 - 3c} + C$
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(17) $\int \frac{1}{\sqrt{x^2 \pm 4^2}} dx = \log  x + \sqrt{z^2 \pm 4^2}  + c$	7
$(18) \int \frac{1}{\sqrt{a^2 - n^2}} dx = \sin^2(n) + c$	
(19) $\int \sqrt{x^{2} + a^{2}}  dx = \frac{x}{2} \sqrt{x^{2} + a^{2}} + \frac{a^{2}}{2} \ln  x + \sqrt{x^{2} + a^{2}} $	С
(20) $\int \sqrt{x^2 - a^2}  dx = x \sqrt{x^2 - a^2} - \frac{a^2 \log  x + \sqrt{x^2 - a^2} }{2} + \frac{1}{2} \sqrt{x^2 - a^2} + \frac{1}{2} x^$	C
(21) $\int \sqrt{a^2 - x^2}  dx = \frac{x}{2} \sqrt{a^2 - x^2} + \frac{a^2}{2} \sin^2(\frac{ac}{a}) + c$	
$\frac{1}{(22)} \int \frac{f(ax+b)}{f(ax+b)} dx = \frac{1}{9} \frac{F(ax+b)}{f(ax+b)} + C  \text{where}  \frac{d}{dx} \left(\frac{F(x)}{f(x)}\right) = \frac{1}{6}$	(x)
(23) $\int \frac{f'(x)}{f(x)} dx = \log f(x)  + c$	
$ \frac{(24)}{\sqrt{1+(24)}} \int \frac{1}{\sqrt{1+(24)}} dx = 2\sqrt{1+(24)} + C $	
$(25) \int \left[ \frac{1}{2} \cos \left( \frac{1}{2} \right) dx \right] = \int \frac{1}{2} \cos \left( \frac{1}{2} \right) dx = \int \frac{1}{2} \cos \left( 1$	
(21) $\int uv dx = u \int v dx - \int \int \frac{du}{dx} \times \int v dx dx dx$ Rule: LIT	ITE
(27) $\int uv  dx = uv_1 - u^1 v_2 + u'' v_3 - u'''v_4 + $	
$\frac{(29)}{(29)} \int_{0}^{6x} \frac{e^{x}}{\sin bx} dx = \frac{e^{4x}}{a^{2} + b^{2}} \left( \frac{a \sin bx}{a \cos bx} + C \right)$	
a <sup>2</sup> +b <sup>2</sup> Respective specific is patel CMSE, MVPHID (CM) 9427535059.	