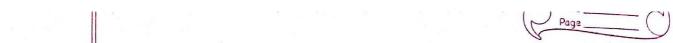
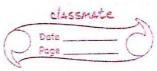
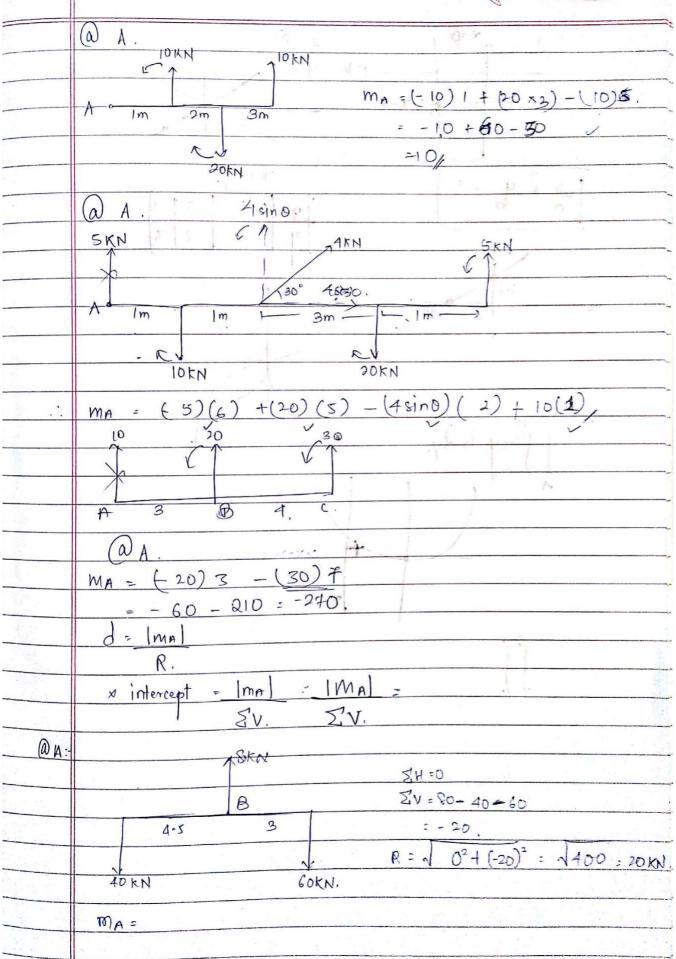
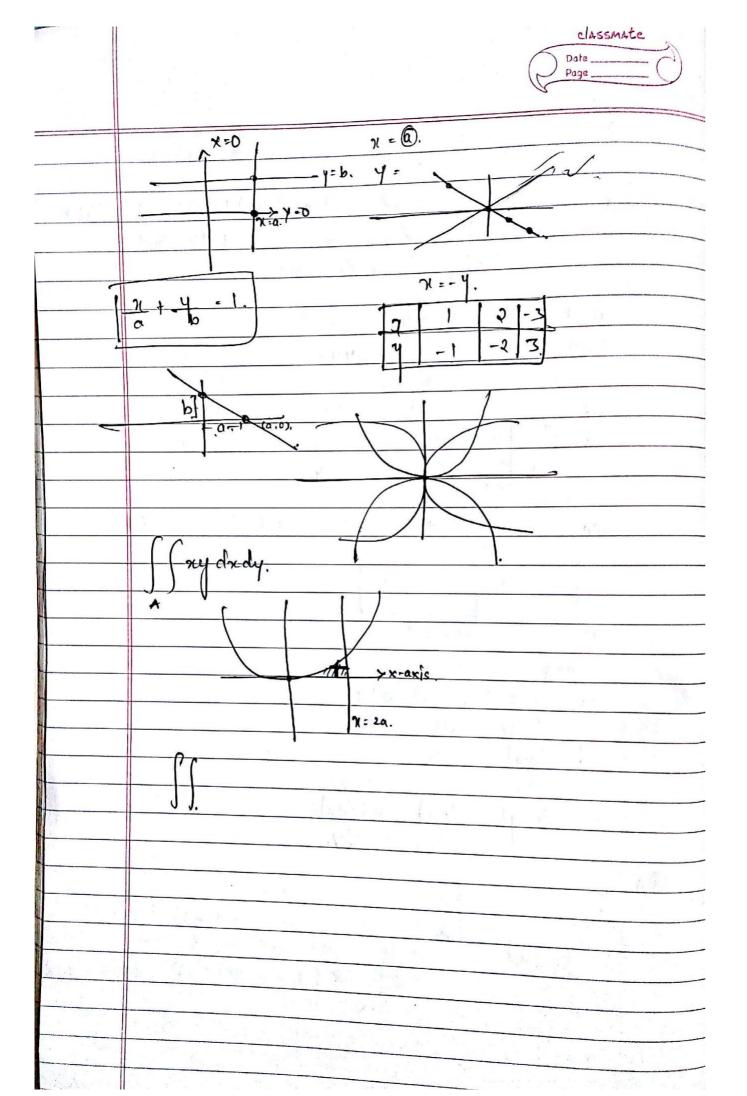
	MODULE -5
Date 23 5 17	KINEMATICS Page
->	Kinematics : without considering forces.
	Kinetice : considering the forces.
→	Displacement: Leate of change of position.
→	Linear Velocity
	Angular Velocify
	Uniform velocity
	Non-uniform (velocity
	Average Velocity ()
	$Vav = \Delta S$ Δt
→	Instantaneous Velocity
	Vin = lim 13 ds
430.0	Atro Dt dt
->	Deaccelaration/Retardation: Acceleration with decreasing
	Ne locity,
- True	Derivation of equations of motions:
	agerivación of
	V= u+at
	$s = ut + 1_at^2$.
	$V^2 - U^2 = 2as.$
-	Acceleration due to gravity (g)-
	a = clv $v = dx$
Tadul	l.
Haux F.	dr. adt. dr. de
Dan =	1/2 Polv = aft dr = (votat) dt
	2. " (dx = (u+at) dt
2005 =	v-(v-u) = a(t-0)
-)201:1	-uiv= u+at]; a-o = (u+ + kat2)
	a=v.dv S=Out 1 al?
	dx) 3-9 41
FP TOP	

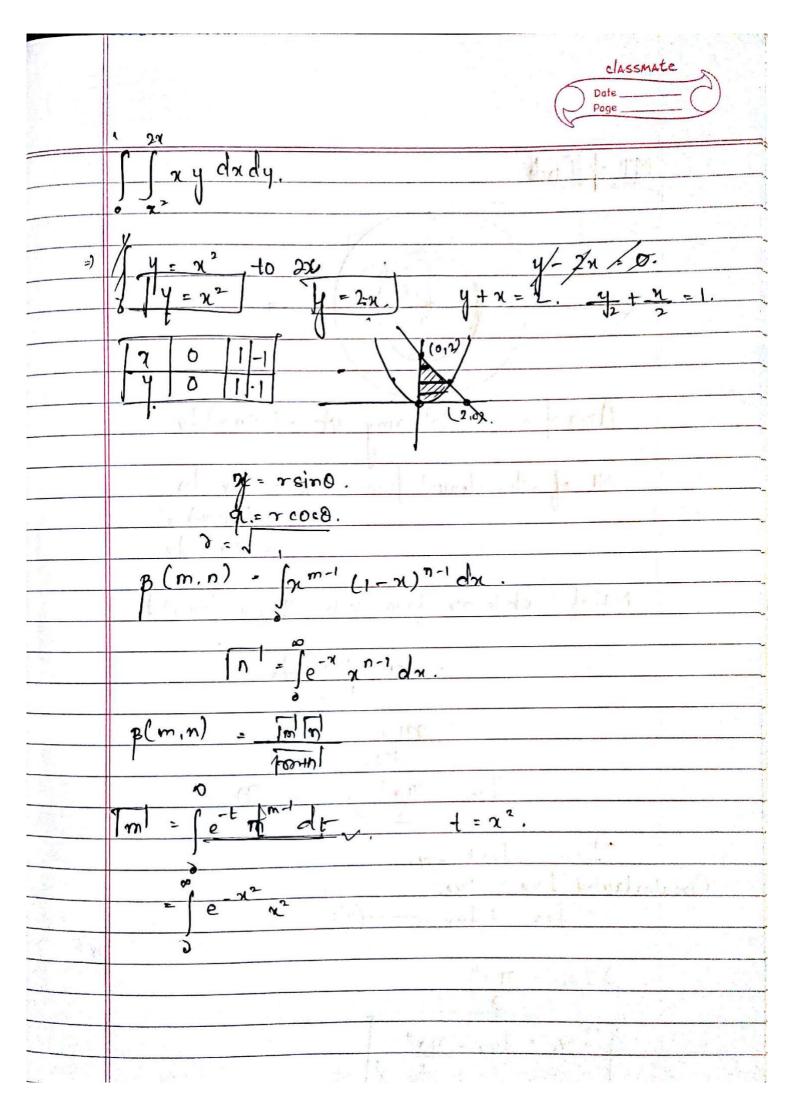


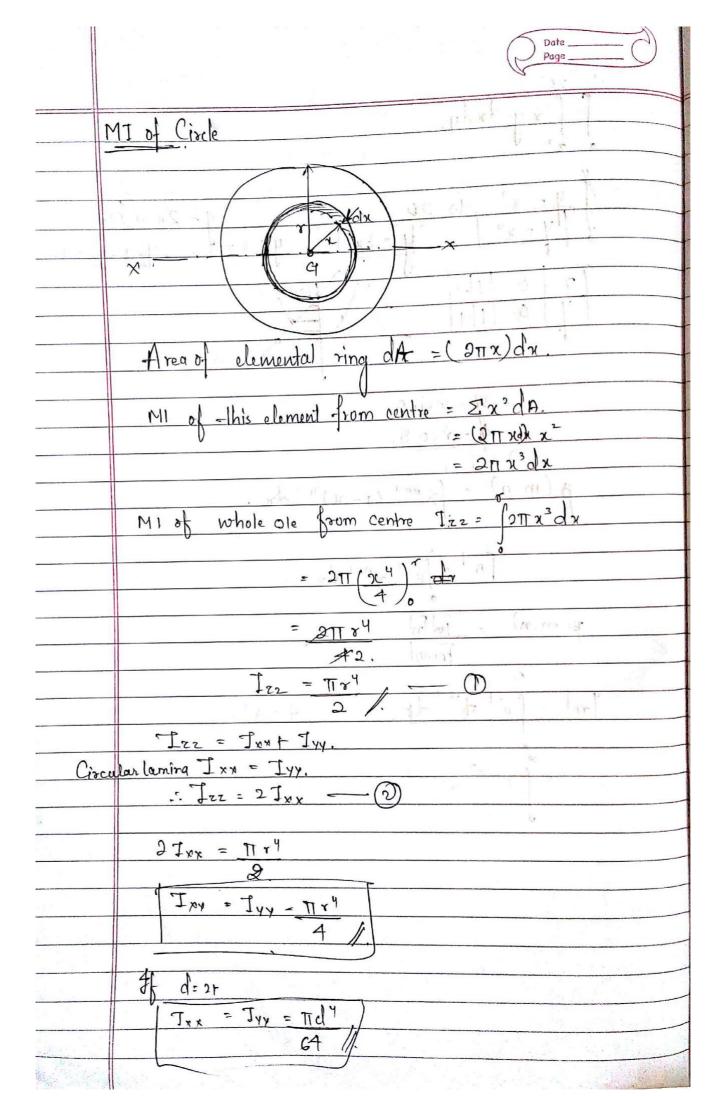
Angueric Theorem: Statement he altebraic sum of all the moment of a superior of cirplus forces about a moment certise is equal to the moment of the tresultant of the came moment certise. In resultant force about the same moment certise. A B = angle made by resultant with axis = 0 Trom A A O B :- tos 0 d O A. 3) d = OA cos 0. Rxd = RXOA cos 0. Rxd = RXOA cos 0. Rxd = RXOA cos 0. Similarly fixd = fix OA. Component of R along x-axis. Similarly fixd = fix OA. Component of R along x-axis. Similarly fixd = fix OA. (Fixd) + (fixd) = (fixt fix) OA. (Fixd) + (fixd) = Rxd Hence provad (1)		
Statement - he altebraic sum of all - the moment of a system of corplan forces about a moment certise is equal to the moment of		Varianonis Theorem:
Fr. A AOB = angle made by resultant with axis = 0. Tom AAOB: OAD PRICE AND COSO. PRICE RXOA COSO. PRICE RXOA COSO. PRICE RXOA COSO. Similarly Fixd: FroA. Component of R along x-axis. Similarly Fixd: FroA. Component of Radon (British Component) Fixd: FroA. (Fixd) + (Fixd) = (Fix Fr) OA. (Fixd) + (Fixd) = Rxd	-0-	
Fr. A AOB = angle made by resultant with axis = 0. Tom AAOB: OAD PRICE AND COSO. PRICE RXOA COSO. PRICE RXOA COSO. PRICE RXOA COSO. Similarly Fixd: FroA. Component of R along x-axis. Similarly Fixd: FroA. Component of Radon (British Component) Fixd: FroA. (Fixd) + (Fixd) = (Fix Fr) OA. (Fixd) + (Fixd) = Rxd	Statement	- he allebraic sum of all lhe moments of a system of co-plan
The resultant - force about the same moment curbs. O do F A P A P A P A P A P A P A P A		
AOB = angle made by resultant with axis = 0. From AAOB :- Cos D :- OA. Prod = RXOA cos D. Prod = RXOA cos D. Prod = Rx OA. — (1) it Rx - Component of R along x-axis. Similarly Fixd, = Fix OA. — (2) Fixd; = Fix OA. — (3) (Fixd) + (Fixd) = (Fix Fix) OA. (Fixd) + (Fixd) = Rx OA. — (3) (Fixd) + (Fixd) = Rx OA. — (3) (Fixd) + (Fixd) = Rx OA. — (3)		
Fr. AOB = angle made by resultant with axis = 0. Trom AAOB:- OB OA. -) d = OA COSO. -) Rxd = RxOA COSO. -) Rxd = RxOA. — 3.1 h Rx - Component of R along x-axis. Similarly Fixd; = FxOA. — 3. Fixd; = FxOA. — 3. (Fixd;) + (Fixd) = (Fixt Fix OA. — 3. (Fixd;) + (Fx xd) = (Rx)OA. — 3.		, , , , , , , , , , , , , , , , , , ,
AOB = angle made by resultant with axis = 0. Irom AAOB:- OS O - d OA. -) d = OA COSO. -) Rxd = RxOA COSO. -) Rxd = Rx OA. — (1) It Rs - Component of R along x-axis. Similarly Fixd, = Fx OA. — (2) Fixd, = FixOA — (3) (Fixd,) + (Fixd,) = (Fixt FixOA . — (3)(ii) (Fixd,) + (Fixd,) = Rxd (Fixd,) + (Fixd,) = Rxd		01 02 72
AOB = angle made by resultant with axis = 0. Irom AAOB:- OS O - d OA. -) d = OA COSO. -) Rxd = RxOA COSO. -) Rxd = Rx OA. — (1) It Rs - Component of R along x-axis. Similarly Fixd, = Fx OA. — (2) Fixd, = FixOA — (3) (Fixd,) + (Fixd,) = (Fixt FixOA . — (3)(ii) (Fixd,) + (Fixd,) = Rxd (Fixd,) + (Fixd,) = Rxd		Ada Ja
ZAOB = angle made by resultant with axis = 0. From AAOB:- OA. OA. -) d = OA COSO. -) Rxd = RxOA COSO. -) Rxd = RxOA. — (a) In Rx - Component of R along x-axis. Similarly Fixd = FixOA. — (a) Fixd = FixOA. — (a) (Fixd) + (Fixd) = (Fixt Fix)OA. (Fixd) + (Fixd) = (Rx)OA. — (a)		S B F
ZAOB = angle made by resultant with axis = 0. From AAOB:- OA. OA. -) d = OA COSO. -) Rxd = RxOA COSO. -) Rxd = RxOA. — (a) In Rx - Component of R along x-axis. Similarly Fixd = FixOA. — (a) Fixd = FixOA. — (a) (Fixd) + (Fixd) = (Fixt Fix)OA. (Fixd) + (Fixd) = (Rx)OA. — (a)		d for
ZAOB = angle made by resultant with axis = 0. From AAOB:- OA. OA. -) d = OA COSO. -) Rxd = RxOA COSO. -) Rxd = RxOA. — (a) In Rx - Component of R along x-axis. Similarly Fixd = FixOA. — (a) Fixd = FixOA. — (a) (Fixd) + (Fixd) = (FixtFixOA. — (a) (Fixd) + (Fixd) = (RxOA. — (a) (Fixd) + (RxOA. — (a)		TO SE
Fixd, + (Fixd2) = (Rx)OA. — 3(ii) (Fixd) + (Fixd2) = Rxd		
Fixd) + (Fixd2) = (Rx)OA. (3(1)) (Fixd) + (Fixd2) = Rxd. (3(1)) (Fixd) + (Fixd2) = Rxd. (3(1)) (Fixd) + (Fixd2) = Rxd. (3(1))		
Cos D = d. OA. -) d = OA COS O. -) Rxd = RXOA COS D. -) Rxd = Rx OA. — (a) in R Rx - Component of R along x-axis. Similarly Fixd; = FixOA — (a) Fixd; = FixOA — (a) (Fixd;) + (Fixd;) = (Fix+Fix)OA. (Fixd;) + (Fixd;) = (Rx)OA. — (a)(ii) (Fixd;) + (Fixd;) = Rxd (Fixd;) + (Fixd;) = Rxd		P VDd
OA. =) d = OA COSO. =) Rxd = RXOA COSO. =) Rxd = Rx OA. — (a) in Rs - Component of R along x-axis. Similarly Fixd; = Fx OA. — (a) Fixd; = Fx OA — (a) Adding eq (b) and (c). (Fixd;) + (Fixd;) = (Fix+Fix) OA. (Fixd;) + (Fx d;) = (Rx) OA. — (a) (Fixd;) + (Fx d;) = Rxd (Fixd;) + (Fx d;) = Rxd		
=) d = OA COSO. =) Rxd = RXOA COSO. =) Rxd = Rx OA. — (3) it Rx - Component of R along x-axis. Similarly Fixd = Fx OA. — (5) Fixd = Fx OA. — (5) Fixd = Fx OA. — (5) (Fixd) + (Fixd) = (Fix+Fx) OA. (Fixd) + (Fixd) = (Rx) OA. — (3)(ii) (Fixd) + (Fixd) = Rxd		
$7 \text{ Rxd} = \text{ RXOA cosb.}$ $7 \text{ Rxd} = \text{ Rx OA.} - \text{3.1 R}$ $R_{x} - \text{ Component of } \text{ R along } \text{ x-axis.}$ $Similarlay F_{1} \text{ xd}_{1} = F_{x} \text{ OA.} - \text{D}$ $F_{2} \text{ xd}_{2} = F_{2} \text{ xOA} - \text{D}$ $\therefore \text{ Adding eq D and D.}$ $(F_{1} \text{ xd}_{1}) + (F_{1} \text{ xd}_{2}) = (F_{1} + F_{2}) \text{ OA.}$ $(F_{1} \text{ xd}_{1}) + (F_{2} \text{ xd}_{2}) = (R_{x}) \text{ OA.} - \text{3(ii)}$ $(F_{1} \text{ xd}_{1}) + (F_{2} \text{ xd}_{2}) = \text{Rxd}$		
Fixed: $= R_{\times} \circ A$. Similarly $= F_{1} \times A_{1} = F_{2} \times A_{3} = F_{2} \times A_{3$		
Similarly $F_1 \times d_1 = F_2 \times OA$. — \bigcirc $F_2 \times d_2 = F_2 \times OA$ $Adding eq \bigcirc and \bigcirc. (F_1 \times d_1) + (F_1 \times d_2) = (F_1 + F_2) \circ A (F_1 \times d_1) + (F_2 \times d_2) = (R_2) \circ A (F_1 \times d_1) + (F_2 \times d_2) = R_2 \times d$		
Fixed; $F_{1} \times OA = \mathfrak{D}$. Adding eq \mathfrak{D} and \mathfrak{D} . $ (F_{1} \times d_{1}) + (F_{1} \times d_{2}) = (F_{1} + F_{1}) OA .$ $ (F_{1} \times d_{1}) + (F_{2} \times d_{2}) = (R_{x}) OA . = \mathfrak{D}(i) $ $ (F_{1} \times d_{1}) + (F_{2} \times d_{2}) = R \times d_{1} $	Rx-	Component of R along x-axis.
Fixed; $F_{1} \times OA = \mathfrak{D}$. Adding eq \mathfrak{D} and \mathfrak{D} . $ (F_{1} \times d_{1}) + (F_{1} \times d_{2}) = (F_{1} + F_{1}) OA .$ $ (F_{1} \times d_{1}) + (F_{2} \times d_{2}) = (R_{x}) OA . = \mathfrak{D}(i) $ $ (F_{1} \times d_{1}) + (F_{2} \times d_{2}) = R \times d_{1} $		
Adding eq ① and ②. $ (F_1 \times d_1) + (F_1 \times d_2) = (F_1 + F_2) \circ A .$ $ (F_1 \times d_1) + (F_2 \times d_2) = (R_x) \circ A . $ $ (F_1 \times d_1) + (F_2 \times d_2) = R_1 \times d_2 $ $ (F_1 \times d_1) + (F_2 \times d_2) = R_2 \times d_2 $		
$(F_1 \times d_1) + (F_1 \times d_2) = (F_1 + F_2) \circ A.$ $(F_1 \times d_1) + (F_2 \times d_2) = (R_1) \circ A. \longrightarrow (\mathfrak{I})$ $(F_1 \times d_1) + (F_2 \times d_2) = R \times d$		F_xd_= F_xOA - 2.
$(F_1 \times d_1) + (F_1 \times d_2) = (F_1 + F_2) \circ A.$ $(F_1 \times d_1) + (F_2 \times d_2) = (R_1) \circ A. \longrightarrow (\mathfrak{I})$ $(F_1 \times d_1) + (F_2 \times d_2) = R \times d$		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
$\frac{(F_1 \times d_1) + (F_2 \times d_2)}{(F_1 \times d_1) + (F_2 \times d_2)} = \frac{(R_1) \circ A}{(R_2)} = \frac{(R_2) \circ A}{(R_2)}$		Hading eq W and W.
$\frac{(F_1 \times d_1) + (F_2 \times d_2)}{(F_1 \times d_1) + (F_2 \times d_2)} = \frac{(R_1) \circ A}{(R_2)} = \frac{(R_2) \circ A}{(R_2)}$		(r, rd) + r(r, rd) $(r+r) = r$
(Fixdi)+ (Fixd2) = Rxd		$(\Gamma \times J) + (\Gamma \times$
// 11		[Exd]+ (Exd) = Pxd
Proved ()		// 11
		Licite proved .



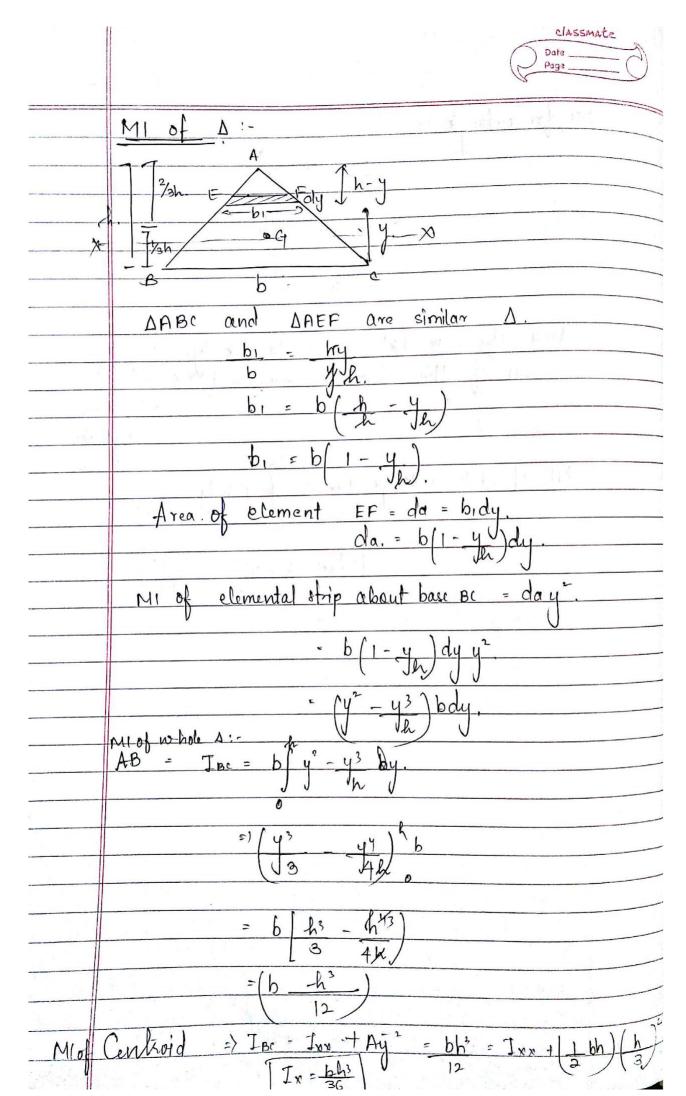








	MI for rectangle :-	- A 1
		-da.
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	7 (200.0) 600 1319	1 (1)
	Area of elemental strip :	da = brdy.
	Area of elemental strip =	used about xx = (day)
	MI Of -IVIS ECTIVERITY	= a bx du y"
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	= phydy == = byg dy
5.		de de
13	MI of whole rectangle Ixx =	l u halu.
112		
73	1 / 1 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2
	Jun=	b(43) bd3
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12
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	a data	
Territoria de la composição de la compos		



MI	of	Semi-circle	:-
_	-		4

N- 6 7. 47 917

. MI of the semicircle about A = 1 MI of circle.

= 1 x TI84 4

· 11 44

MI about centroidal axis

JAB = Ixx + Aq2.

 $\frac{\text{TIX}^{4}}{8} = \text{Ixx} + \left(\frac{\text{TI}^{2}}{2}\right) \left(\frac{48}{311}\right)^{2}$

71x4 - 1182 (8682) = Ixx

777 - 8967 = Ing

8 91T =) [Jxx = 0.11~4]

Tyy = 1 x MI of circle - 17x4

