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Part - B () mbseres) - I to ovol

Ano: to the que: No-4

xbx cord & 1

Let, la In = Jeon nicht xois | h xtoop xmis

> In = Scan-12. con 2d2

= con^{n-1} x $\int conxdx - \int dx (con^{-1}x) \int conxdx dx$

= $\omega_0^{n-1} \times .5 m \times - \int (n-1) \omega_0^{n-2} \times (-5 in \times) .5 m \times dx$

= con^{n-1} x. $sin x + (n-1) \int con^{n-2} x (1-con^2 x) dx$

= con n-1 x. sinx + (n-1) fean n-2xdx - (n-1) fean xdx

= conn-12. sinx+(n-1) In-2 - (n-1) In

 \Rightarrow In+(n-1) In = $con^{n-1}x \cdot sinx + (n-1) In-2$

$$\Rightarrow J_{n} (1+n-1) = s^{m} x_{1} \cos^{n} x_{2} + (n-1) J_{n-2}$$

$$\Rightarrow J_{n} = \frac{s^{m} x_{1} \cos^{n} x_{2}}{n} + \frac{m-1}{n} \int_{con}^{con} x_{1} dx$$
Now, let, $I = \int_{con}^{con} x_{1} dx \dots \int_{con}^{n-2} x_{2} dx$

$$I = \frac{s^{m} x_{1} \cos^{n} x_{2}}{8} + \frac{7}{8} \int_{con}^{con} x_{1} dx$$

$$= \frac{s^{m} x_{1} \cos^{n} x_{2}}{8} + \frac{7}{8} \int_{con}^{con} x_{1} dx$$

$$= \frac{s^{m} x_{1} \cos^{n} x_{2}}{8} + \frac{7s^{m} x_{1} \cos^{n} x_{2}}{6} + \frac{35}{48} \int_{con}^{con} x_{1} dx$$

$$= \frac{s^{m} x_{1} \cos^{n} x_{2}}{8} + \frac{7s^{m} x_{1} \cos^{n} x_{2}}{48} + \frac{35s^{m} x_{1} \cos^{n} x_{2}}{192}$$

$$= \frac{s^{m} x_{1} \cos^{n} x_{2}}{8} + \frac{7s^{m} x_{1} \cos^{n} x_{2}}{192} + \frac{35s^{m} x_{1} \cos^{n} x_{2}}{192}$$

$$= \frac{s^{m} x_{1} \cos^{n} x_{2}}{8} + \frac{7s^{m} x_{1} \cos^{n} x_{2}}{192} + \frac{35s^{m} x_{1} \cos^{n} x_{2}}{192} + \frac{35s^{m} x_{2} \cos^{n} x_{2}}{19$$

 $\frac{105}{192} \left[\frac{\sin x \cos x}{2} + \frac{1}{2} \int dx \right]^{192}$

$$= \frac{\sin x \cdot \cos^{3}x}{8} + \frac{7 \sin x \cdot \cos^{3}x}{48} + \frac{35 \sin x \cdot \cos^{3}x}{192}$$

$$= \frac{35 \sin x \cdot \cos^{3}x}{128} + \frac{35 x}{128} + 2$$

$$= \frac{192}{128}$$
And to the give: NO-4

(niven that,
$$= \frac{(b)}{30^{11} \cdot (b)} + \frac{(b)}{30^{11} \cdot (b)}$$

$$x+1 = 2x^{2} \Rightarrow 2x^{2} = x-1 = 0$$

$$x = -\frac{1}{2} \text{ or } x = 1$$
Now,
$$dv = Adx$$

$$\Rightarrow dv = \pi \left\{ (x+1)^{2} - (2x^{2})^{2} \right\} dx$$

$$\Rightarrow \int dv = \int \pi \left\{ (x+1)^{2} - 4x^{4} \right\} dx$$

$$-\frac{1}{2} = \int (x+2x+1) dx - \int (4x^{4}) dx dx$$

$$\Rightarrow V = \pi \left\{ \left[\frac{x^{3}}{3} + 2 \cdot \frac{x^{2}}{2} + x \right] - 4 \left[\frac{x^{5}}{5} \right] \right\} - \int (x+1)^{2} dx$$

$$\Rightarrow V = \pi \left\{ \left[\frac{x^{3}}{3} + 2 \cdot \frac{x^{2}}{2} + x \right] - 4 \left[\frac{x^{5}}{5} \right] - \int (x+1)^{2} dx dx$$

$$\Rightarrow V = \pi \left\{ \left[\frac{x^{3}}{3} + 2 \cdot \frac{x^{2}}{2} + x \right] - 4 \cdot \left(\frac{x^{5}}{5} + \frac{1}{160} \right) \right\}$$

$$\Rightarrow V = \frac{9\pi}{5} \quad \text{ewise unit.}$$

Annito the que: NO-5

ant to retarribuse (ii) we (iii) boo (ii) prints

The given equation of the comic is - Mr

 $8x^2 + 4xy + 5y^2 - 24x - 24y = 0...$

comparing the equation with the second degree equation-

ax2+2hx]+by2+2gx+2fy+c=0, we get,

a=8, h=2, b=5, 1=-12, f=-12, c=0,

 $\Delta = abc + 2fgh - af^2 - bg^2 - ch^2$

 $=8.6.0 + 2(-12)\cdot(-12)\cdot2-8\cdot(-12)^2-5(-12)^2-0\cdot2^2$

=0+576-1152-720-0

mortages set most symmetr most to set modes

and,

and, ab-h2 = 40-4=36>00 for 100+ 100 od not our

Hence, the given equation represent an ellipse.

Again, gs = $16x + 4y - 24 = 0 \Rightarrow 4x + y - 6 = 0 ... (i)$

85 8x = 4x+10y-24=0 = 2x+5y-12=0 ... (ni) Solving (ii) and (iii) we get the coordinates of the contre of the conic which are (1,2). Shifting the origin to (1,2) and tramaining the 8220 9211512-29x-243= direction of the axes maltered, the earotion (i) taken the motormant this instance out promotions 822 + 424 + 295 46, 20 150 (in) let 191 / 1846 + 20 where, c'= 9x, +fy, + c = (-12)·1+(-12)·2+0=-36 Putting e' = -36, in (iv), we get, 8x2 + 4x1 + 512=36...(0) when the my term tremove from the equation (v) by the trotation of axes, let the treduce equation be $0.2^2 + by^2 = 36 - (1) - 01 - 100$ The by the invertion + propertise, we ghove, aith = a+0 = 8+5 = 13

April 32 - 16x + 41-14 = 0 = 4

and, a,b, = at-h2 = 40-4 = 36

b1 = 13-a, a on our of of ont. aib, = a, (13-a,) = 36 (0) $0 \Rightarrow 130, -0.2 = 36$ the first equation to. => a12-13a, +36=0. > (a,-4)(a,-9) =0 0=18-x ele+ 12+ 12+ 1x ele+ 6 $b_1=9$ { $a_1=9$ $b_1=4$ $b_1=4$ $b_1=4$ $b_1=9$ } $a_1=4$ $a_2=4$ $a_3=4$ $a_4=4$ $a_4=4$ rutuato Since c' in negative. so we choose aux bi . a, =4, b,=9 Putting the values of a, and b, in (vi), we get 1x2+912=36 must be startinile at those to he required modelin in- $\Rightarrow \frac{x^2}{9} + \frac{y^2}{4} = 1$ de - genet $\Rightarrow \frac{\pi^2}{\pi^2} + \frac{y^2}{2^{\nu}} > 1$ (10) loof - 100 4 this is the standard form of an ellipse. (100-) * = 15 C

Ama: to the que: No-5 (a,b) - (a, (13-01):36 (b) · DE = 10 - DE 1 = 0 The given equation in, 0 - 35 + 1081 - 56 - 0 22+2/3 21 +312+2/3 2-21=0...() ((0)) (+10) Comparing it to the record deprese general equation. 02 + 2haj + bj2 +2g2 +2fj+e=0 svilogen oi some 6=19 'b=10 . herce, a=1, b=3, h=13, 1=13, f=-10 coulor sal- pollog If we want to eliminate my term, the trequired Trotation inton20 = 2h 1 = = - + = - - - \Rightarrow 20 = +ont $\left(\frac{2h}{a-b}\right)$ $\Rightarrow 0 = \frac{1}{2} tan \left(\frac{2x\sqrt{3}}{1-3}\right)$ must be think a contraction with $\Rightarrow \Theta = \frac{1}{2} \pi (-60^\circ)$ ⇒ 0 --30