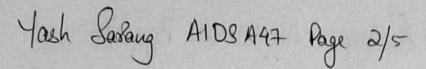
Roll No: 47 Seat No: AIDSA47 Subject: Engineering Mathematics 2. Date: 05/08/2021.



Ja. A) cos x dy + y sinx = Ty secx

1 coax dy + Ty sinx = Tsecx

I dy + Ty tonex = (secx)3/2

let Jy = u, 1 dy = dy

:. 2 du + 4 tan x = (sec x)3/2

This is a linear equation of the form dy + Put Q

1.F = e = e = (sec x)/2

. : Solution of differential equation

y Jsecx = fisec2x.dx.

4 Jsecx = Itanxtc.

i, y = 1 tonx Toox + c Toox is the solution.

92. F) 3π 3^{10} 9 $(1+\cos 9)^{4}$ $d9 = 21\pi/8$ (To prove)

Using of F(x).dx = 2 f F(2a-x).dx

sin20 (1+ cos 0)4. d0 = 2 sin2 (2π-0) (1+ cos (2π-0))4. d0.

Yash Sarlang AIDSA47 Page 3/5

$$= 2^{\pi} \int \sin^{2}\theta \left(1 + \cos\theta\right)^{4} d\theta \qquad (3\pi - \theta) = \cos\theta$$

$$= 2^{\pi} \int (2\sin\theta \cos\theta)^{2} \left(2\cos^{2}\theta\right)^{4} d\theta$$

$$= 2^{\pi} \int (4\sin^{2}\theta \cos^{2}\theta + 2^{4}) d\theta$$

$$= 2^{\pi} \int (4\sin^{2}\theta \cos^{2}\theta + 2^{4}) d\theta$$

$$= 2^{\pi} \int (3\sin^{2}\theta \cos^{2}\theta + 2^{4}) d\theta$$

= 2 sin u . cos u . 2 du.

$$= 2^{+} \left[2^{\frac{11}{12}} \sin^{2} u \cdot \cos^{2} u \cdot du \right] = 2^{+} \beta \left(\frac{3}{2}, \frac{11}{2} \right)$$

$$= \int_{-\infty}^{\infty} \frac{3/2}{12} \frac{11/2}{12} = \int_{-\infty}^{\infty} \frac{11/2}{12} \frac{1$$

Yash Sarang AIDSA4A Page 4/5 92. c) (D-2)24 = 8 (e2x + sindx+x2) P.T = 1 $\left[8(e^{2x} + \sin 2x + x^2)\right]$ $= 8 \left[\frac{e^{2x}}{(D-2)^2} + \frac{\sin 2x}{D^2 - 4D + 4} + \frac{x^2}{(D-2)^2} \right]$ $= 8 \left[\frac{\chi e^{2x}}{2D-4} + \frac{3in2x}{-K-4D+K} + \frac{\chi^2}{4[1-0/2]^2} \right]$ $= 8 \left[\frac{\chi^2 e^{2\chi}}{4D} - \frac{1}{4D} \sin 2\chi + \frac{1}{4} \chi^2 \left[1 - \frac{D}{2} \right]^{-2} \right]$ = 4 $\int x^2 e^{2x} + \cos 2x + \int \left(x^2 + 2x + 3\right)$ Complete Solution = C.F + P.I ". Complete Solution = (C1+C2x) ex + 4222x + cos 2x + x2 + x + x + 3

FOR EDUCATIONAL USE

Yash	Savang	AIDS A47	Page 5/s
			4

Using method of variation of parameters.

(D'+1) y = sex tank

D+1=0

sextanx=0.

C.F = Cicosx + Czsinx.

W = [cosx sinx] : W=1.

4 = - fyel du = - foinx 1 tonx dx

= - | fan2x.dx = - ((sec2x-1).dx

u = -tanz + x

v = fyer dx - fresk, selxtonx odx

v = - la | cos x

By vontation, PoI = uy, + vy2 = cosx(-tonnetx)+(-log(cosx)) sinx

. P. I = cos x (x-tanx) + sinx (-log(coxx))

is Complete solution = CF+P.I = $G(68x + c_2 \sin x + cosx(x-tonx) + \sin x [-log(cosx)]$