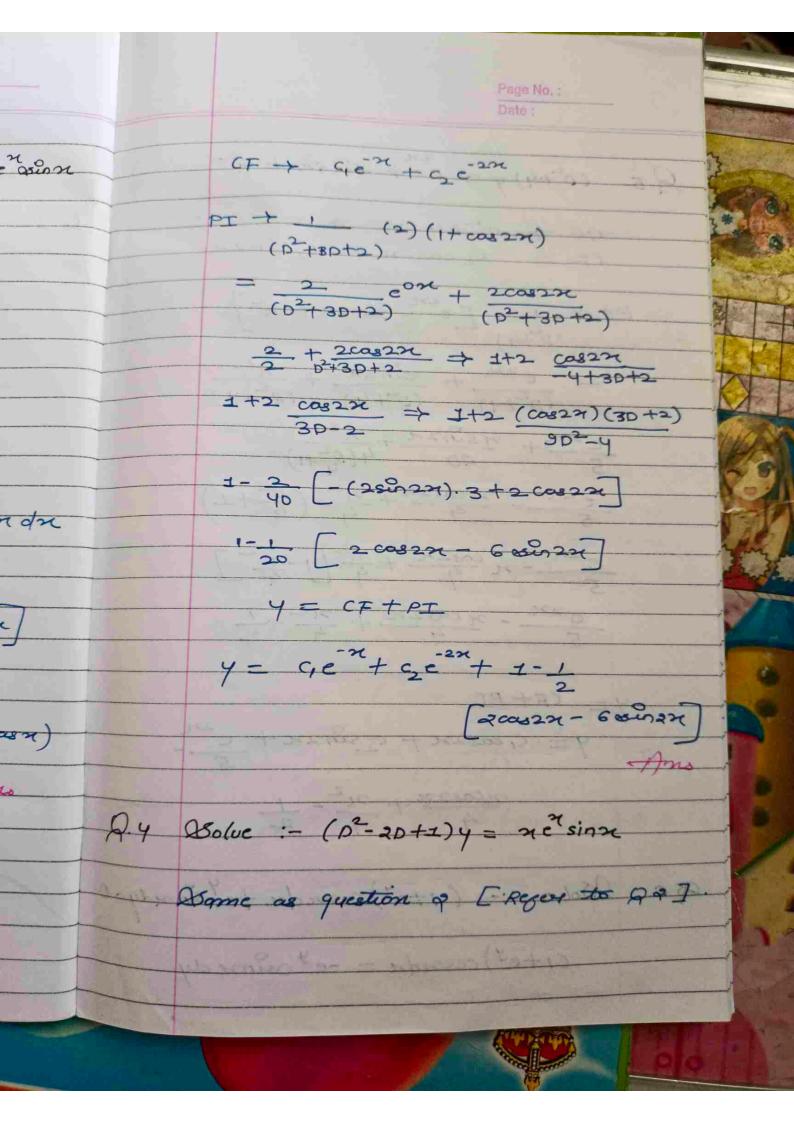
Page No.: ASSIGNMENT 1 Salve - (en14+1) dn + en14 (1-21) dy $\frac{d\pi}{dy} = \frac{-e^{\pi i y}}{i + e^{\pi i y}}$ dy = 0 y dv + x dx = - e 214 (1-214) U+ y dv = - c (1-v) 9 du = -(cu+u) 1+et $\frac{1+e^{\vee}}{(v+e^{\vee})}dv = \int -dy + \log c$ log (v+c") = -logy + log c OteV = C (4 + e 214) 4 = c = (ntenly, y = 6

Page No.: Asolve: (p2-20+1) y = ne 2000 Q. 2 PI - 1 ne son (02-20+1) = en (nsin) (p+1-1)2 = en finsondndn e [[-ncasn+sinn] = cm[(-nsinn-casn)-casn = - (ncon+ 2008x) 4= (c, n+ c2) e - e (nson + 2008 x) [Y= CF+PI] 2.3 Solve (p+ 30+2) y - 4 cos 2 17E + m + 3m +2 =0 (m+1) (m+2) = 0 m = -1 ay -2



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Q5.
$$(0^2+4)y = e^2 + 3602x + 2$$
 $-4E \rightarrow m^2 + 4 = 0 \rightarrow m = \pm 32$
 $(E = c_1 cas2x + c_2 sin2x)$
 $= \frac{1}{(p^2+4)} = \frac{1}{(p^2+4)} + \frac{1}{(p^2+4)} + \frac{1}{(p^2+4)}$
 $= \frac{2x}{(p^2+4)} + \frac{1}{(p^2+4)} + \frac{1}{(p^2+4)}$
 $= \frac{2x}{5} + \frac{1}{2p} + \frac{1}{4(p^2+1)}$
 $= \frac{2x}{5} - \frac{1}{4(p^2+1)} + \frac{1}{4(p^2+1)} + \frac{1}{4(p^2+1)}$
 $= \frac{2x}{5} - \frac{1}{4(p^2+1)} + \frac{1}{4(p^$

(1+ey) cossider = -e & sum dy

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$$\int \frac{\cos nx}{\sin nx} \, dn = \int \frac{e^{y}}{(1+e^{y})} \frac{dy}{dy} + \log c$$

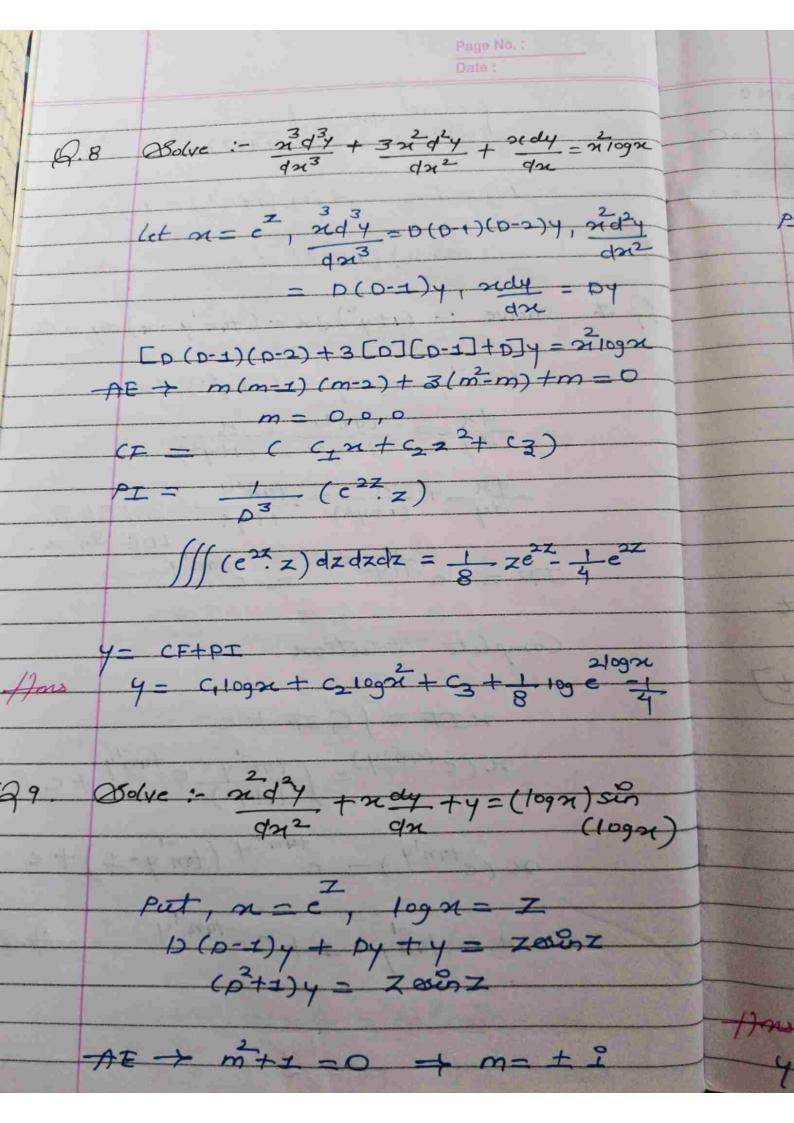
$$\log \frac{\sin nx}{\sin nx} = -(\log (1+e^{y}) + \log c$$

$$(8 \sin n) (1+e^{y}) = C \qquad \text{fine}$$

$$Q = \frac{\cos (nx)}{(1+e^{y})} \frac{dn}{dx} = (1+y^{2}) \frac{dn}{dx} = 0$$

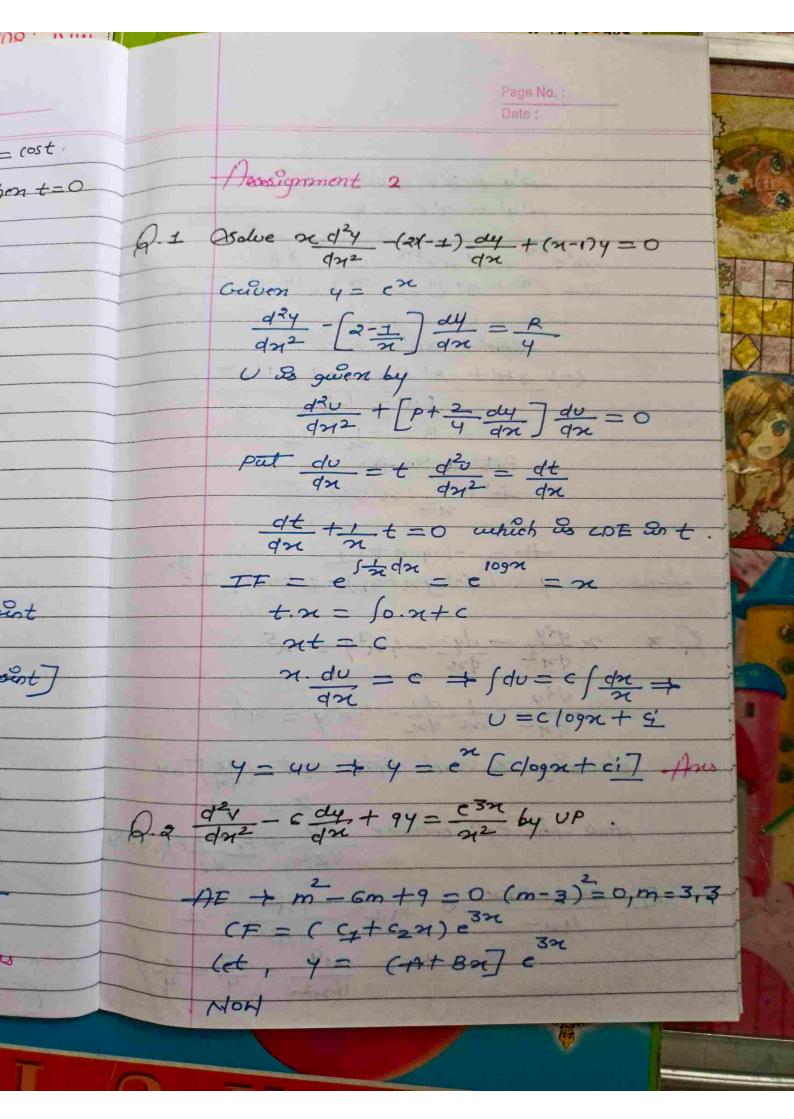
$$(1 \sin^{2} y - n) \frac{dy}{dy} = (1+y^{2}) \frac{dn}{dx}$$

$$\frac{dn}{dy} = \frac{\tan^{2} y}{(1+y^{2})} = \frac{\sin^{2} y}{(1+y^{2})} = \frac{\sin^{2} y}{(1+y^{2})} = \frac{\sin^{2} y}{(1+y^{2})} = \frac{\sin^{2} y}{(1+y^{2})} = \frac{\cos^{2} y}{(1+y^{2})} = \frac{\tan^{2} y}{(1+y$$

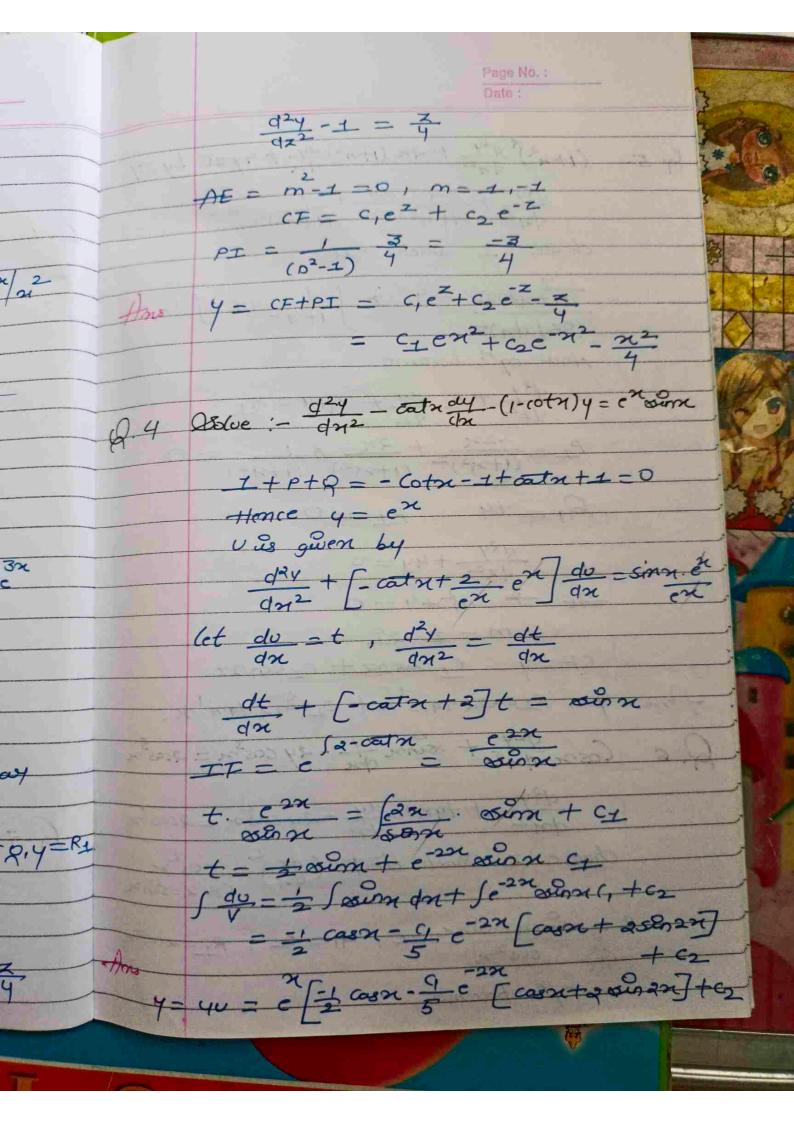


CF = Gy Casz + G Sin Z Cy cas logge + cz an logge $PT = 1 \qquad z \approx 0$ $(p^2 + 1)$ NOW we will take imaginary part $PI = I.F ag | zc^{iZ} \rightarrow IP ag$ $(p^2+1) \qquad e^{iZ} \qquad (p+i)^2+1$ $\frac{e^{iz}}{2iD}\left\{1+\frac{D}{2i}\right\}^{-1}Z$ $\frac{\mathbb{IP} \, ap \, e^{iZ}}{2iD} \left[\frac{1-D}{Zi} \right] Z = \frac{\mathbb{IP} \, ap \, e^{iZ}}{2iD} \frac{1}{D}$ $\frac{TP \circ p \left(\cos z + \sin z\right) \left[\frac{z^2}{a} - \frac{z}{ai}\right]}{2i}$ TP of -2 Cosz + 2 8 2 7 PI = 4,2 [Sinz-zcasz] 4- Gas logn + Ganlogn + 1/ogn [sinlogn-logn]

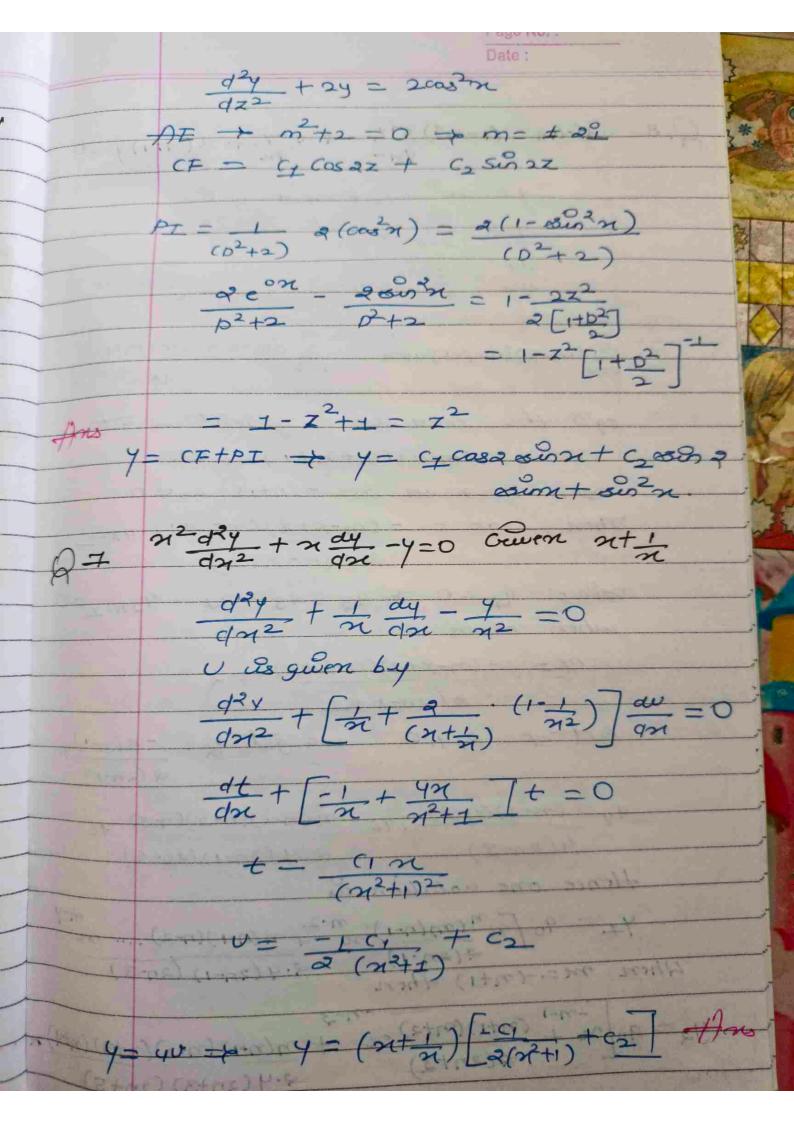
Dolye dr. +y = sunt dy +n = cost. Q 10 Gewen that n=2 & y=0 when t=0 n = cost - dy of [coast - dy] + y = orint - 474 + 4 = 258nt (p2-1) y = - 200 int AE - m2-1-0 m= =, -1 CF = c, et + czet $pI = 1 - \left[-2\sin t\right]$ $p^2 - 1$ -1 -2 sent - sent y = CF+ PT = Gct + get + went Put y In nwe get n = cost - d [cret + czet + west] n=-cet+cet Given n=2, y=0 at t=0 C1+C2 = 0 - C++C2 = 2 (+) 262 - 2 C2=18 C1=-1 c2=+1, C1=-+ -/700



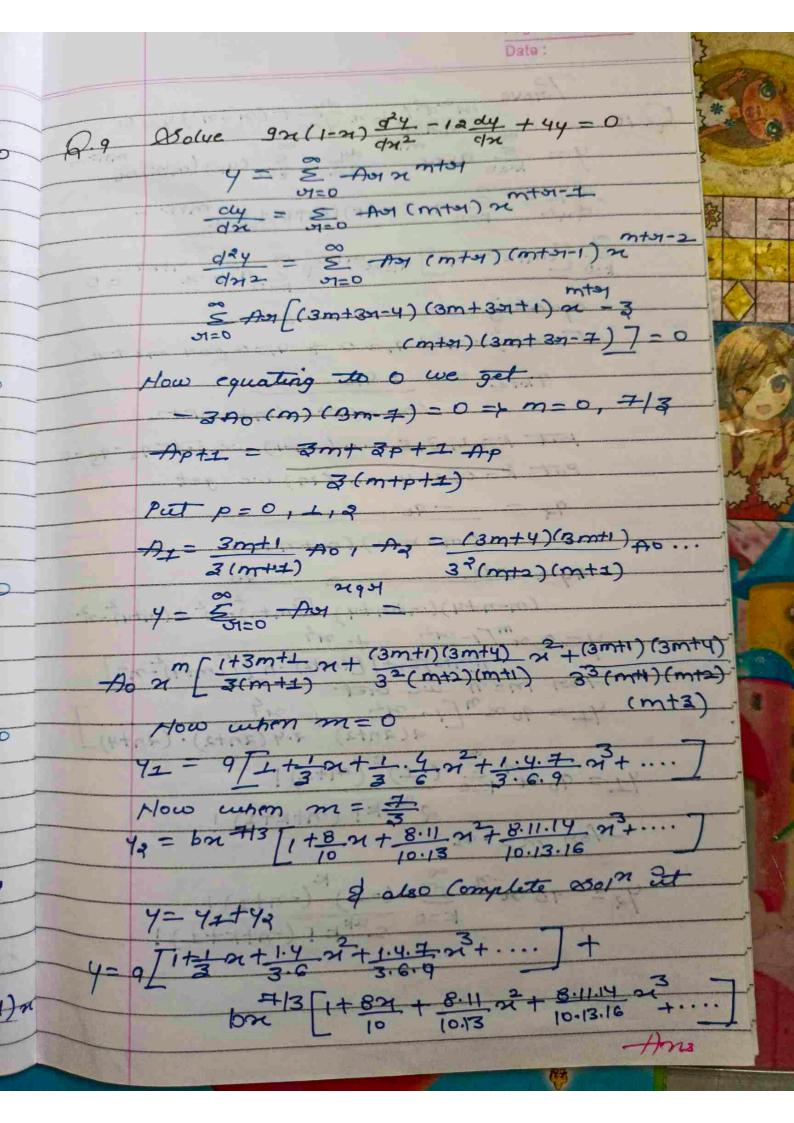
Page No. 14 + B'V = 0 A'y' + B'y = RA'e3x + B'ne - 0 X3
3A'e3x + B' [3ne3x + e3x] - e/2 3A'+ 3B'x = 0 (-) 3A'+ B'[3n+1]=1/n2 SB'= 5-1/2 2.4 B= -1+ C2 Put B Sn A A'+1 x=0 y = [(-logn+c1)=1+2c2] 32 $\frac{\chi}{d^2 y} - \frac{dy}{dx} - \frac{4\chi^3 y}{dx} = \frac{\chi^5}{4\chi^5}$ 134 - 1 dy - 421 y = 24 102 - 202 die - 421 y = 24 choosing 7 such that -yn = (dx) ay flow the egn become dy + Py dy + Q, Y=1 P-2-2-X22 = 0 R+=-422 = -4 R1 = 214 = 22 = 7 422 = 4



(1+2) dy + 2x (1+2) dy + 4y = 0 by Iy Q 5. dry + 22 dy + 4 = 0 dry + (1+2) dri (1+2)2 = 0 choose Z such that $\frac{4}{(1+n^2)^2} = 4 + \int \frac{1}{1+n^2} dx = \int dz$ (dz/dy)2 How ran become 174 + P+ dy + R14 = R1 $P_{+} = \frac{-2\pi}{(1+\pi^{2})^{2}} + \frac{2\pi}{(1+\pi^{2})} \times \frac{1}{(1+\pi^{2})} = \frac{-2\pi}{(1+\pi^{2})^{2}} + \frac{2\pi}{(1+\pi^{2})^{2}} \times \frac{1}{(1+\pi^{2})^{2}} = \frac{-2\pi}{(1+\pi^{2})^{2}} \times \frac{1}{(1+\pi^{2})^{2}} = \frac{\pi}{(1+\pi^{2})^{2}} \times \frac{1}{(1+\pi^{2})^{2}} = \frac{\pi}{(1+\pi^{2}$ Q, = +4 R1 =1 dry +4y =0 AE - m2+4=0 m = ± 22 CF=y= C+ Cas2z+ C2 Scn 2z y = 61 cos 2 ton nt c2 sin 2 ton n. Cosn dn2 + sun dn - 24 cosn = 20052 dn2 + tonn dy - 24 cosn = 2cosm choose z osuch that (dz) - cosn P, = - Sumt sinx = 0, A1 = 2, R1 = 2005 m egn becomes



Page No. Osolve (1-2) diy - andy + n(n+1) y =0 Q.9 y = nm (90+9n+...) 4 = & 9k 2 m-k dy = & ak (m-1c) or dy2 = & ak (m-k) $\sum_{k=0}^{\infty} (m-k)(m-k-1) q k n - \sum_{k=0}^{\infty} (m-k-n)(m-k+n+1)$ egn the zone to conficient we get (m-a) (m+n+1) 90=0 000, m-n as m= -(n+1), 90 \$0 ak = - (m-k+2)(m-k+1) ak-2 k(2n-k+1) since 9=0 = 9= 9= 9= 9= 9= 9= 1=0 when m=n 9K= - (n-K+2)(n-K+1) 9K-2 k (2n-k+1 Put 1= 2,4,6 we get 92= -n(m1)90 a (2n-1) 94=-(n-2)(n-3) 196= n(n-1)(n-2)(n-3) 90 4(27-3) 2.4(27-1)(27-3) Hence one upletion as 4x = 90 [nm(m)(n-1) m-2 + m(n-1)(n-2) m-4 2(27-1) 2.4(2n-1) (2n-3) When m=-(n+1) then 90 2 + (n+1)(n+2) 2 + n(n+1)(n+2)(n+3)(n+4)
2 (2n+3) 2.4 (2n+3) (2n+5) 1)ns



Date: Prove 22 dy + 2 dy + (22-2) y = 0

dx = 2 qk 2 dy = 2 (qk) (mtk) 2

y = 2 qk 2 dy = 2 (qk) (mtk) 2 024 = 5 ak (mtk) (mtk-1) x mtk-2 E [(mtk)2-n2] 9kxmtk+ & 91kx mtk+2=0 equating to zero we get [(m+1) - n2] q,= 0 = q,= 0 gor m= ±n 9 kt2 = - 9k (m-n+k+2) (m+n+k+2 Put k=0,7,4 (21) we get (m-n+2)(m+n+2)94 = -92 (m-n+4)(m+n+4) [(m+2)-n2] (m+4)-n y=902 m[1-22 + 214 [im+2]=n2][(m+2)2-n2][(m+4)2-n2] -For m= n we oret Test m= n we cret

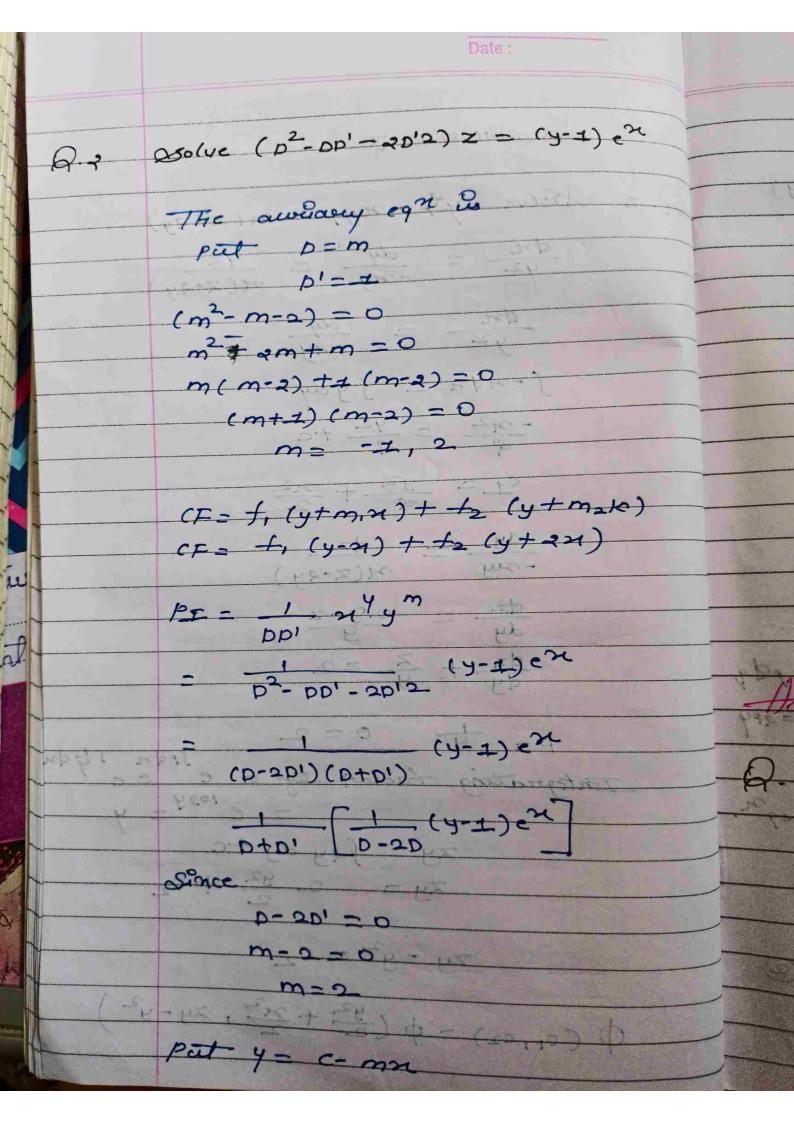
11 = 90 m [1- 22 + 24

2(2n+2) 2.4 (2n+2). (2n+4)] 41 = 90 m E (-1) (n+1)! for m = - or 42 = 90 % & (-1) k (-n+1)!

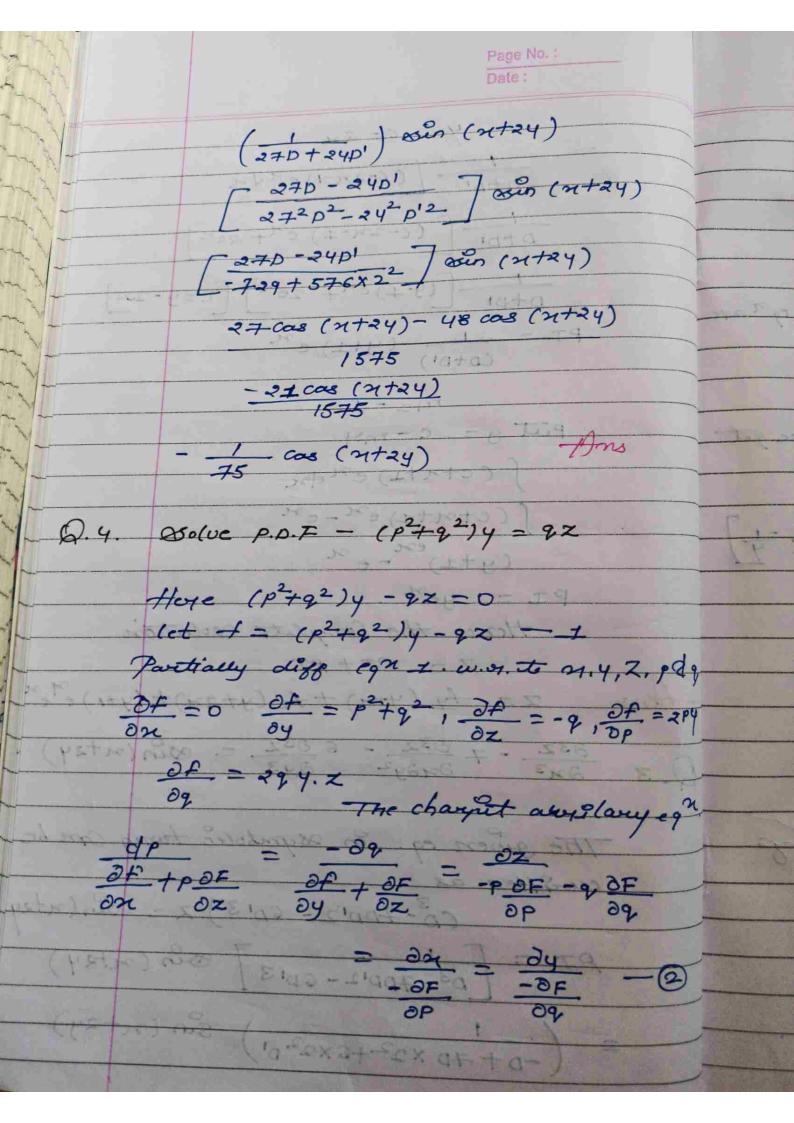
k=0 2k k! (-n+1)!

Ans

Date: - ASSIGNMENT 3 Solve yop - nyq = n(z-24) $\frac{dx}{y^2} = \frac{dy}{-xy} = \frac{dz}{x(z-2y)}$ dr = dy - my f-ndn = Sydy - 2 = 42 +c CT = 32 + 22 dy = 29-2 $\frac{dz}{dy} + \frac{z}{y} = 2$ P= y 0=2 Sport stydn Integrating factor If = e zy = fay dy tc $xy = 2 \frac{y^2}{2} + c_2$ 7y - y2 = C2 Φ (c1,c2) = φ (2 + 22, 2y - y2)



Dtp' [(c-2n-1) endn D+D' ((-2x-+) ex+ 2ex) D+D1 [(y-+) ext 2ex] [c=y-2x] PT = (y+1) e 2 (c+x+1) endn S(c+n++)en-en Hence the Complete solution Z= CF+PT 7= -fy (y-21) + +2 (y+221) + (y+1) = 2 $0.3 \quad \frac{\partial^3 z}{\partial x^3} - 7 \quad \frac{\partial^3 z}{\partial x \partial y^2} - 6 \quad \frac{\partial^3 z}{\partial y^3} = 8 \sin(x + 2y)$ The gwen eq. in supubolic tom com be (B-70012 - 6013) Z - 8500 (xtay- $PT = \begin{bmatrix} 1 \\ D^3 - 7pp'^2 - 6p'^3 \end{bmatrix} \otimes in(ntry)$ $= \left(-0 + 70 \times 2^{2} + 6 \times 2^{2} 0'\right) \sin (x + 2y)$



Date: $\frac{\partial P}{\partial P} = \frac{dq}{P^2 + q^2 - q^2} = \frac{dz}{-P(2Py) - q(2qy - z)}$ 1st & 2nd $\frac{dP}{-PV} = \frac{dV}{P^2} = PdP = -VdV$ $\pm m + m \rightarrow \frac{p^2}{2} = \frac{-9^2}{2} + \frac{9^2}{2}$ - Som egn (1) & (3) we get 994 = 92 [2= 924] -100m egn (3) + P2+ 944 = P= 92- 944 92, 22-94,42 = P = q 72-92,2 The general egn dz = Fdx + qdy dz = 9 / 22- 92y2 dx + 03y dy 7dz = 9 / 22-92y2 dx + 92ydy 79x - 92ydy = 9 - 22-92y2 dx zdz - a2ydy = adx ~ 72-92y2 Let += \ \ \ z^2 - a^2 y^2 dt = azdz - 292ydy dt = zdz - 92 ydy 1 - + 1/2 = qontb (23- a3y) = 9x+b

 $(2^2-q^2y^2)=(qn+b)^2$ [22 = a2y2+ (an+b)2] -/7me Q. 5 Solve 22 + y 2 = 22 Here the Cagrange's Osubsidiary r_9^{21} and $\frac{dx}{21^2} = \frac{dy}{y^2} = \frac{dz}{z^2} - \boxed{2}$ Taling 1st two tenction of (1) we get doc = dy 212 - 42 Talung 1 & 3 members of egn 1 $\frac{dx}{dx^2} = \frac{dz}{z^2}$ Tれがり - 1 - 2 - C2 [ca = 1 - 1] Hence the nequired general soon of the given com is * ゆ (カラリー)=0 cuhere p us en aubitiary function