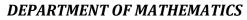


SNS COLLEGE OF TECHNOLOGY



(An Autonomous Institution) Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai Accredited by NAAC-UGC with 'A++' Grade (Cycle III) & amp; Accredited by NBA (B.E - CSE, EEE, ECE, Mech & amp; B.Tech.IT) COIMBATORE-641 035, TAMIL NADU



L'Egendre s linear d'ra
regendres linear differential equation
$K_{o} (ax + b)^{n} \frac{d^{n}y}{dx^{n}} + k_{i} (ax + b)^{n-i} \frac{d^{n-i}y}{dx^{n-i}} + \dots + k_{n}y$ $Replace Z = \log (ax + b)$
$\frac{d^{2}g}{dr^{2}} + k_{1} (ax+b)^{n-1} d^{n-1} q$
$dx'' \qquad \frac{dx^{n-1}}{dx^{n-1}} + \cdots + \kappa_n y$
$\mathcal{R}_{\text{replace}} = f(x)$
Replace $Z = \log(ax+b)$ = $f(x)$
$(or)e^{z} = ax+b$
$(ax+b)\frac{dy}{dx} = a \cdot p'y$
dx dx
10 Carol March 10 Car
$(ax+b)^{2} \frac{d^{2}y}{dx^{2}} = a^{2} \cdot D'(D'-1) y$
dX
$(ax+b)^{3} \frac{d^{3}y}{dx^{3}} = a^{3} D'(D'-1)(D'-2)y \text{ and so on}$
$\frac{1}{4} = a D(D-1)(D-2)y \text{ ond so on}$
Dretter
Problems:
O T I III III III III III III IIII IIII
1) Transform the equation to constant coefficients
equation
$(2x+3)^{2}y'' - (2x+3)y' + 2y = 6x$
Soln:
$Put \ z = \log(2x+3)$
$e^{2} = 2\chi + 3$
$=) e^{2} - 3 = 2x \Rightarrow \boxed{x = e^{2} - 3}$
=) $e^{-3} = 2\pi = 7 \left[\pi = \frac{e^{-3}}{2} \right]$
(011, 7) dy 2 D'H
$(2\chi+3)\frac{d\gamma}{d\chi} = 2 \cdot D' \gamma$
$(2x+3)^2 \frac{d^2y}{dx^2} = 2^2 D'(D'-1)y$
dx ²



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DEPATMENT OF MATHEMATICS
Griven evaluation will be,

$$\frac{z^{2}}{z^{2}} (z^{2} - i) y - 2z^{2} y + 2y = 4 \left(\frac{z^{2}}{2}\right)$$

$$-4 (z^{2} - z^{2}) y - 2z^{2} y + 2y = 3 (e^{2} - 3)$$

$$\left[(+2)^{2} - +2^{2} - 2z^{2} + 2 \right] y = 3 (e^{2} - 3)$$

$$\left[(+2)^{2} - 6z^{2} + 2 \right] y = 3 (e^{2} - 3)$$

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$$e^{2} = 2 + 2 = 2 (e^{2} - 2)$$

$$\left[(+2)^{2} - 6z^{2} + 2 \right] y = 3 (e^{2} - 2)$$

$$\left(2 + 2 \right) \frac{dy}{dx^{2}} = 2^{1} (2^{2} - 1)^{2} y$$

$$\left(2 + 2^{2} - 3z^{2} + 2 \right) y = 3 (e^{2} - 2) + 4$$

$$\left(2 + 2^{2} - 3z^{2} + 1 \right) y = 3 (e^{2} - 2) + 4$$

$$\left(2^{2} - 2z^{2} + 1 \right) y = 3 (e^{2} - 2) + 4$$

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