MTH401 – Differential Equations - Midterm Paper

Session 4 – Fall 2005

www.vuzs.net

M = Marks= 40
Time: 90min

MTH401 - Differential Equations - Q. No. 1 (M - 1)

The differential equation

$(3x^2y + 2)\,dx + (x^3 + y)\,dy = 0$

is

►Exact

►Linear

►Homogenous

►Separable

MTH401 - Differential Equations - Q. No. 2 (M - 1)

The assumed particular solution for the U.C (Undetermined Coefficient) differential equation

$$y' - y = x^2e^{2x}$$

is

► $y_p = c_1e^{x^2} + c_2x^2$

► $y_p = (Ax + B)e^{2x}$

► $y_p = (Ax^2 + Bx + c)e^{2x}$

►None of these.

MTH401 - Differential Equations - Q. No. 3 (M - 1)

The differential equation $x\frac{dy}{dx}+y=y^2\ln x$ **is an example of**

►Separable

►Homogenous

►Exact

►None of these.

MTH401 - Differential Equations - Q. No. 4 (M - 1)

For the differential equation

y' −2xy=x

Integrating factor is

►$-x^2$

► e^{x2}

►e^{-x2}

►x^2

MTH401 - Differential Equations - Q. No. 5 (M - 1)

$$\frac{dy}{dx}=\frac{x+3y-5}{x-y-1}$$

Identify the ordinary differential equation

►Homogenous

►Separable

►Exact

►None of these.

http://www.vuzs.net/old-papers.html

MTH401 - Differential Equations - Q. No. 6 (M - 5)
Solve the differential equation

$$\frac{dy}{dx}+\sqrt{\frac{1-y^2}{1-x^2}}=0$$

MTH401 - Differential Equations - Q. No. 7 (M - 10)
Solve

$(y\text{Sec}^2x+\text{Sec}x\ \tan x)\ dx+(\ \tan x\ +\ 2y)dy\ =0$

MTH401 - Differential Equations - Q. No. 8 (M - 10)
Find the equation of orthogonal trajectories of the curve

$x^2+y^2=cx$

MTH401 - Differential Equations - Q. No. 9 (M - 10)
Solve the differential equation by method of variations of parameters

$$\frac{d^2y}{dx^2}+y=\tan x\ \sec x$$