INTERNATIONAL INDIAN SCHOOL BURAIADAH

WORK SHEET-2025-26

SUBJECT: MATHS

Chapter :9-Differential EquationsMCQ:

1- $The\ degree\ of\ differential\ equation\ x^2\frac{d^2y}{dx^2} = (x\frac{dy}{dx} - y)^3\ is$

(a) 1 (b) 2 *(c)* 3 (d) 6

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2- $The\ degree\ of\ differential\ equation\ \frac{d^2y}{dx^2} + 3(\frac{dy}{dx})^2 = x^2\log\left(\frac{d^2y}{dx^2}\right) is$

(a) 1 (b) 2 *(c)* 3 (d) not defined

3- The Solution of the differential equation $\frac{dx}{x} + \frac{dy}{y} = 0\ is$

a) $\frac{1}{x} + \frac{1}{y}$ =C (b) logx-logy=C (c) xy =C (d) x + y = C

4-The Solution of of the differential equation $x\frac{dy}{dx} + 2y = x^2\ is$

(a) $y = \frac{x^2+c}{4x^2}$ (b) $y = \frac{x^2}{4}$ +C (c) $y = \frac{x^4+c}{x^2}$ (d) $y = \frac{x^4+c}{4x^2}$

5-Degree of the differential equation $sinx + \cos\left(\frac{dy}{dx}\right) = y^2\ is$

(a) 2 (b) 1 (c) not defined (d) 0

6- The degree of the differential equation $[\ 1 + (\frac{dy}{dx})^2]^{\frac{3}{2}} = \frac{d^2y}{dx^2}$ is

(a) 4 (b) $\frac{3}{2}$ (c) not defined (d) 2

7- Integrating factor of differential equation $(1\text{-}x^2)\frac{dy}{dx}$ -xy =1 is

(a) -x (b) $\frac{x}{1+x^2}$ (c) $\sqrt{1-x^2}$ d) $\frac{1}{2}\log(1-x^2)$

8-What is the product of the order and degree of the differential equation $\frac{d^2y}{dx^2} + [\frac{dy}{dx}]^3$ = siny is

a) 5 b) 2 (c) 3 (d) 4

9-What is the product of the order and degree of the differential equation $\frac{d^2y}{dx^2}siny + (\frac{dy}{dx})^3cosy = \sqrt{y}$

a) 3 b) 2 (c) 6 (d) not defined

10- The general solution of the differential equation $xdy - (1+x^2)dx = dx\ is$:

(a) $y = 2x + \frac{x^3}{3}$ +C (b) $y = 2logx + \frac{x^3}{3}$ + C c) $y = \frac{x^2}{2}$ + C d)) $y = 2logx + \frac{x^2}{2}$ + C

Subjective:

1-Solve the differential equation $(y+ 3\ x^2)\frac{dx}{dy} = x$

2-Find the general solution of the differential equation

$\log(\frac{dy}{dx})$= ax + by

3-Find the general solution of the differential equation $x\frac{dy}{dx} = y(logy - logx + 1)$

4-Find the particular solution of the differential equation $x\frac{dy}{dx} + xcos^2(\frac{y}{x})$= y ; given that when x=1 , y =$\frac{\pi}{4}$

5- Find the particular solution of the differential equation $x\frac{dy}{dx} = y - xtan(\frac{y}{x})$, given that y= $\frac{\pi}{4}$ at x=1

6-Solve the differential equation (1 + x^2) $\frac{dy}{dx}$ + 2xy - $4x^2$=0 subject to the initial condition y(0) =0

7-Find the general solution of the differential equation : $\frac{d}{dx}$(xy^2) = 2y(1 +x^2)

8-Solve the following differential equation : x $e^{\frac{y}{x}}$ – y + x$\frac{dy}{dx}$=0

9-Solve the differential equation given by $xdy - ydx - \sqrt{x^2 + y^2}$ dx =0

10-Find the particular solution of the differential equation
$\frac{dy}{dx} + sec^2x\,.y = tanx.sec^2x\ given\ that\ y(0) = 0$

11-Find the general solution of the differential equation :

$$(xy - x^2)dy = y^2dx$$

12- Find the general solution of the differential equation : (1 + x^2) $\frac{dy}{dx}$ + 2xy = $\sqrt{x^2 + 4}$