



ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION



Solutions of worksheet-20

SUBJECT – MATHEMATICS

Pre-test

Chapter: Differential Equations

Class: XII

Topic : Linear Differential Equations

Date: 22.08.2020

Choose the correct option

(1 X 15= 15)

1. In the linear differential equation of the form $\frac{dy}{dx} + Py = Q$, Q is -
 - a. A constant.
 - b. A constant or a function of x.**
 - c. Function of y.
 - d. Function of both x & y.
2. In the linear differential equation of the form $\frac{dx}{dy} + Px = Q$, Q is -
 - a. A constant.
 - b. Function of x.
 - c. A constant or a function of y.**
 - d. Function of both x & y.
3. The integrating factor of the differential equation $\frac{dy}{dx} + Py = Q$, is -
 - a. e^x
 - b. e^{Px}
 - c. $e^{\int P dx}$**
 - d. $e^{\int P dy}$
4. The integrating factor of the differential equation $\frac{dx}{dy} + Px = Q$ is -
 - a. e^x
 - b. e^{Px}
 - c. $e^{\int P dx}$
 - d. $e^{\int P dy}$**

5. $\frac{d^3y}{dx^3} + y = \sqrt[3]{1 + \frac{dy}{dx}}$ is a differential equation of degree -

- a. 1
- b. 2
- c. 3
- d. 4

6. The integrating factor of the differential equation $x \frac{dy}{dx} - y = x^2$ is -

- a. $1/x$
- b. e^x
- c. $e^{2\log x}$
- d. $e^{-2\log x}$

7. The integrating factor of the differential equation $(x + y + 1) \frac{dy}{dx} = 1$ is -

- a. e^{-y}
- b. e^x
- c. e^{-x}
- d. e^y

8. The integrating factor of the differential equation $x \log x \frac{dy}{dx} + y = \frac{2}{x} \log x$ is -

- a. x^2
- b. $\log x$
- c. $\frac{1}{x}$
- d. $\frac{1}{x^2}$

9. Solution of $\frac{dy}{dx} - y \tan x = -2 \sin x$ is -

- a. $y \sin x = \frac{1}{2} \cos 2x + c$
- b. $y \cos x = \frac{1}{2} \cos 2x + c$
- c. $y \sin x = \frac{1}{2} \cos x + c$
- d. $y \sin x = \frac{1}{2} \sin 2x + c$

10. Solution of $\frac{dy}{dx} + y \cot x = 2 \cos x$ is -

- a. $y \cos x = -\frac{1}{2} \cos 2x + c$
- b. $y \sin x = -\frac{1}{2} \sin x + c$
- c. $y \sin x = \frac{1}{2} \sin 2x + c$
- d. $y \sin x = \frac{1}{2} \sin x + c$

11. Solution of $\cos t \frac{dx}{dt} + x \sin t = 1$ is -

- a. $x = \sin t + c \cos t$
- b. $y = \sin t + c \cos t$
- c. $x = x \sin t + c \cos t$
- d. $x = y \sin t + c \cos t$

12. Solution of $(x + 2y^3) \frac{dy}{dx} = y$ is -

- a. $y = x^3 + cx$
- b. $x = y^3 + cy$
- c. $y = x^3 + cy$
- d. $x = y^2 + cy$

13. Solution of $ydx - (x + 2y^2)dy = 0$ is -

- a. $x = y^2 + cy$
- b. $x = 2y^3 + cy$
- c. $x = 2y^2 + cy$
- d. $x = 2y^3 + cy$

14. Solution of $dx + xdy = e^{-y} \sec^2 y dy$ is -

- a. $xe^y = \tan y + c$
- b. $xe^x = \tan y + c$
- c. $xe^y = \tan x + c$
- d. None of these.

15. Solution of $(x - y^2)dx + 2yx dy = 0$ is -

- a. $y = x \log \frac{c}{x}$
- b. $y^2 = \log \frac{c}{x}$
- c. $y^2 = x \log \frac{c}{x}$
- d. None of these.

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