Solution by Riz mughal

1. THE INTEGRATING FACTOR FOR THE FIRST ORDER LINEAR DIFFERENTIAL EQUATION: DY/DX+Y COT X =SIN^{2}X IS

SIN X

2. THE INTEGRATING FACTOR FOR THE FIRST ORDER LINEAR DIFFERENTIAL EQUATION:

$$\frac{dy}{dx} + y\tan x = \cos^2 x \; is$$

SECX

3. IF THE NON-EXACT DIFFERENTAIL EQUATION M(x,y)DX+N(x,y)DY=0 IS OF THE FORM YF(xy)dx+xg(xy)dy=0, then the integrating factor is----------

1/xM-yN,xM-yN!=0

$$\frac{1}{xM - yN}, xM - yN \neq 0$$

4. IF THE NON-EXACT DIFFERENTAIL EQUATION M(x,y)DX+N(x,y)DY=0 IS homogeneous and Xm(X,Y)+YN

$$\frac{1}{xM + yN}, xM + yN \neq 0$$

5. Separable form f(y)dy=g(x)dx, of the differential equation: y-xdy/dx=a(y^2+dy/dx)is-------

$$\frac{1}{y(1-ay)}dy = \frac{1}{x+a}dx$$

6. Which of following will satisfy the differential equation: $\frac{dy}{dx} = -\lambda y$?

$$y = ce^{-\lambda x}$$

7. Ydx-y(sinx)dy=0, is an example of ---- differential equation.

Non-exact

8. Which of the following substitution will transform the differential equation: $\frac{dy}{dx} = \frac{x+y+1}{x+y-1}$, in to separate

Z=x+y

9. Which of the following substitution will transform the differential equation: $\frac{dy}{dx} = \frac{x+y+1}{x+2y+1}$, IN TO A SEPARATE
X=X+h,y=Y+k
10. If the differential equation: M(x,y)dx+N(x,y)dy= 0 is not exact, then after ------------an appropriate function u(x,y), we can from it to be exact.

Multiplying by

11. The integrating factor for the first order linear differential equation: dy/dx+ytanx $=\cos^2 x$ is--------

Sec x

12. Which of the following is an implicit solution of the differential equation: dy/dx=-x/y

$X^2+y^2-4=0$

13. The differential equation(sin2x-tany) dx-xsec^{2}ydy=0 is exact because---------

$$\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x} = -\sec^2 y$$

14. A differential equation M(x,y)dx+N(x,y)dy=0 is exact if and only if----------

$$\frac{\partial}{\partial y} M(x,y) = \frac{\partial}{\partial x} N(x,y)$$

15. Which of the following substitution will transform the differential equation: $\frac{dy}{dx} = \frac{y}{x} + \sec\left(\frac{y}{x}\right)$, into

Y=vx

16. Which of the following is first order linear equation in unknown variable y?

$$x\frac{dy}{dx}+(\sin x)\,y=\cos x$$

17. For the non-exact differential equation $M(x,y)dx+N(x,y)dy=0, if\frac{\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}}{M}i$ is a function of y, then the

Function of y

18. For the non-exact differential equation

$$\left(x^2y-2xy^2\right)dx-\left(x^3-3x^2y\right)dy=0, if xM(x,y)+yN(x,y)=x^2y^2$$

$$\frac{1}{x^2y^2}$$

19. For the non-exact differential equation $ydx-(y-3x-3)\,dy=0, if\frac{\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}}{M}=\frac{2}{y}$

Y^2

20. The differential equation: $\sqrt[3]{\left(\frac{d^2y}{dx^2}\right)^2}=\sqrt{1+\left(\frac{dy}{dx}\right)^2}$ has…………….

Order 2 and degree 4

21. $\frac{d^2y}{dx^2}+5\left(\frac{dy}{dx}\right)^3-3y=e^{\sin x}$ is an example of ---------------differential equation.

Ordinary non-linear

22. The differential equation $\frac{dx}{dy}+\frac{1}{y}x=2\sin y$ is first order linear in unknown……….

Variable x

23. Separable form of the differential equation: $\$\backslash frac\{dy\}\{dx\}=y-1\$$ is -------------,where $v=y-1,$

$\frac{dv}{v}=dx$

24. If $fx^2y^3dx+x^3y^2dy=0$ has the equivalent form as $d\left(\frac{1}{3}x^3y^3\right)=0,$ then its solution is ---------

$X^3y^3=c$

25. Which of the following function would satisfy: $\frac{dy}{dx}=\frac{d^2y}{dx^2}=\cdots=\frac{d^ny}{dx^n}?$

$Y=Ae^x$

26. Which of the following is first order linear equation in unknown variable x?

$$y\frac{dx}{dy}+(\sin y)\,x=\cos y$$

27. Separable form f(y)dy+g(x)dx=0, of the differential equation:x sin ydx+(x^2+1) cos ydy=0 is--------

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

28. $\frac{d^3y}{dx^3}+y^2=0$ IS A ------------differential equation of degree-----

Non-linear.1

29. General solution of the separable differential equation: $\frac{\sec^2 y}{\tan y}dy=dx$ is -------

$y=\tan^{-1}(ce^x)$

By helping hand

30. The homogeneous linear differential equations always possess the --------------solution.

Trivial

31. The auxiliary equation of the differential equation $y'''+2y''-3y=0,$ is---

$(m^3 + 2m^2 - 3)\, e^{mx} = 0$

32. The differential equation $\frac{d^2u}{dx^2} - 2xu + \sin x = 0$ is

Non-linear and homogenous

33. Let $f_1(x) = e^{m_1 x}$ and $f_2(x) = e^{m_2 x}$ are linearly independent because $c_1 f_1(x) + c_2 f_2(x) = 0$

$c_1 = c_2 \neq 0,\ m_1 \neq m_2$

34. The logistic equation, $\frac{dP}{dt} = P(a - bP),$ can be identified as a nonlinear equation that is ---------------

Separable

35. Wronskian of 1 and x^2,W(1,x^2)=----------
2x

36. In the logistic equation $\frac{1}{p}\frac{dp}{dt} = a - bp$ the term $-bp^2$ can be interpreted as
Inhibition term

37. Orthogonal trajectories occur naturally in the area(s) of-------------
(iv)all(i)(ii)and (iii)

38. The leading coefficient in the differential equation $3x\frac{d^2y}{dx^2} - 7x\frac{dy}{dx} + 5y = 0$
3

39. Which one of the following will be used to draw an ogive?

A cumulative frequency distribution

40. Which one is the formula of mid range.

● (Xo+Xm)/2

41. Data arrangement in order of magnitude is called

Arrayed data

42. From the following table what is lower class boundry when mode is calculated?

From the following table. what is lower class boundry when mode is calculated?

Class Boundaries	Frequency
29.95 - 32.95	8
32.95 - 35.95	87
35.95 - 38.95	110
38.95 - 41.95	104
41.95 - 44.95	101

29.95

43. The solutions y1=c1,y2=c2 cosx , y3=c3 sinx of a differential equation are

Linearly independent

44. Wronskian of the functions y1(x)=1,y2(x)cosx,y3(x)=sinx is

1

45. The value of amplitude in the solution X=7sin(3t+2.45) is

7

46. The order of the differential equation $(\frac{du}{dt})^{\frac{1}{3}} = \frac{1}{u}$ is

1

47. The solution of the differential equation $\frac{dy}{dx} = \tan x$ is

○ $y = \ln|cosec\, x| + c$

48. A differential equation $M(x, y)\, dx + N(x, y)\, dy = 0$ is said to be an exact if--------------

$$\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$$

49. The differential equation $(x^2 - 2x + 2y^2)\,dx + 2xy\,dy = 0$ is a/an---------differential equation

Non-exact

50. For a 1st order linear differential equation $\frac{dy}{dt} - \frac{1}{t}y = 2t^2;$ the integarating factor will be--------

$\mu = \frac{1}{t}$

51. A differential equation $\frac{dy}{dx} + p(x)y = q(x)y^n$ for $n \neq 0,$,1 is called a/an------------

Bernoulli equation

52. In order to change the Bernoulli equation $\frac{dy}{dx} + p(x)y = q(x)y^n$ into linear differential equation, we choose----

$v = y^{1-n}$

53. The auxiliary equation of the differential equation $, 3y''' + 5y'' + 10y' - 4y = 0,$ is

$(3m^3 + 5m^2 + 10m - 4)\,e^{mx} = 0$

54. Two function f(x)=x and $g(x) = \sin^2 x + \cos^2 x$ are……..

Linearly independent

55. A modification of the nonlinear logistic differential equation $\frac{1}{p}\frac{dp}{dt} = a - b\ln p$ has been used in the study of…….

All of these

56. If we substitute $u=\frac{y}{x}$ in differential equation $x\frac{dy}{dx}-y=\frac{x^3}{y}e^{\frac{y}{x}}$ then the given differential equation can be simplified to

$$ue^{(-u)}du=dy$$

If $a_n(x)=0$ in the differential equation

$$a_n(x)\frac{d^ny}{dx^n}+a_{n-1}(x)\frac{d^{n-1}y}{dx^{n-1}}+\ldots\ldots+a_1(x)\frac{dy}{dx}+a_0(x)y=g(x)$$

for some xEI

Exist and unique

A function satisifying the differential equation on the some interval I, containing a and b, whose graph passes through two points (a,yo)and (b,y1)is called solution of the -------------value problem

Initial