The coordinate axis is..

DIFFRENTIAL EQUATIONS

BASED ON ORDER AND DEGREE OF THE D.E

1) Order of $\left(\frac{d^2y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^3 + 3y = x^4$ is
1) 3 2) 1 3) 2 4) 4

2) If m and n are order and degree of the equation $\left(\frac{d^2y}{dx^2}\right)^5 + 4\frac{\left(\frac{d^2y}{dx^2}\right)^2}{\left(\frac{d^3y}{dx^3}\right)} + \frac{d^3y}{dx^3} = x^2 - 1$ then (m, n) =
1) (3,3) 2) (3,2) 3) (3,5) 4) (3,1)

3) Order and degree of the differential equation $\frac{dy}{dx} + 2\frac{dx}{dy} = 7$ is
1) 1,1 2) 1,2 3) 2,1 4) 2,2

4) The degree of differential equation $x = 1 + \left(\frac{dy}{dx}\right) + \frac{1}{2!}\left(\frac{dy}{dx}\right)^2 + \frac{1}{3!}\left(\frac{dy}{dx}\right)^3 + \cdots$ is
1) three 2) one
3) not defined 4) four

5) The degree of differential equation of all circles in the first quadrant touching the coordinate axis is
1) 2 2) 1 3) 3 4) 4

6) The order of the differential equations satisfying $\sqrt{1-x^4} + \sqrt{1-x^4} = a(x^2 - y^2)$ is
1) 1 2) 2 3) 3 4) 4

7) The differential equation representing the family curves $y^2 = 2c(x + \sqrt{c})$ when 'c' is a parameter is of
1) degree 2) order
3) degree 4) degree 1

8) The differential equation of all conics with centre at origin is of order
1) 2 2) 3 3) 4 4) 1

9) The degree and order of the differential equation of all tangent lines to the parabola x2 = 4y is
1) 2,1 2) 2,2 3) 1,3 4) 1,4

10) The degree of differential equation of which $y^2 = 4a(x + a)$ is a solution is
1) 2 2) 3 3) 1 4) 4

BASED ON FORMATION OF DIFFRENTIAL EQUATIONS

11) If $y = e^{4x} + 2e^{-x}$ satisfies the differential equation $y_3 + Ay_1 + By = 0$ then
1) A=12, B=13 2) A=13, B=12
3) A=-12, B=-13 4) A=-13, B=-12

12) D.E of $y = Ae^x + Be^{2x} + Ce^{3x}$ is
1) $y_3 - 6y_2 + 11y_1 - 6y = 0$
2) $y_3 + 6y_2 + 11y_1 + 6y = 0$
3) $y_3 - 6y_2 + 11y_1 + 6y = 0$
4) $y_3 - 6y_2 - 11y_1 - 6y = 0$

13) D.E whose solution is $y = e^{3x}(c_1 cosx + c_2 sinx)$
1) $y_2 - 3y_1 + 5y = 0$
2) $y_2 - 6y_1 + 10y = 0$
3) $y_2 + 6y_1 + 10y = 0$
4) $y_2 - 6y_1 - 10y = 0$

14) The D.E whose solution is $y = csinx$ is
1) $\frac{dy}{dx} = ycotx$ 2) $y_2 + y = 0$
3) $\frac{dy}{dx} = ycosx$ 4) $\frac{dy}{dx} = ycosecx$

15) The D.E whose solution is $y = ax^2 + bx + c$ is
1) $y_3 = y$ 2) $y_3 = x$
3) $y_3 = 0$ 4) $y_2 = 0$

16) The D.E whose solution is $y^2 = 3ay - x^3$ is
1) $(x^3 - y^2)\frac{dy}{dx} = 3x^2y$
2) $(x^3 - y^2)\frac{dy}{dx} = 3xy$

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3) $(x^3 - y)\frac{dy}{dx} = 3xy$
4) $(y^2 - x^3)\frac{dy}{dx} = 3xy$

17) The D.E of $xy = ae^x + be^{-x} + x^2$ is
1) $xy_2 + y_1 + xy = 0$
2) $xy_2 + 2y_1 = xy + 2 - x^2$
3) $xy_2 + 2y = xy$
4) $xy_2 + 2y_1 + xy + 2 = 0$

18) The differential equation of family of circles $x^2 + y^2 + 2\lambda x + c = 0$ is (where λ, c both are parameters)
1) $y\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + 1 = 0$
2) $y\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 = 0$
3) $\left(\frac{d^2y}{dx^2}\right) + \left(\frac{dy}{dx}\right)^2 = 0$
4) $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + 1 = 0$

BASED ON VARIABLE SEPARABLE

19) The solution of $\frac{dy}{dx} = \frac{1-y}{1-x}$ is
1) $(1-x)(1+y) = c$
2) $\frac{1-x}{1-y} = c$
3) $(1-x)(1-y) = c$
4) $\frac{1+x}{1-y} = c$

20) The solution of $\frac{dy}{dx} + ytanx = 0$ is
1) $y = a\,cosx$ 3) $y = \log cosx + c$
2) $y = a\,sinx$ 4) $y = a\,tanx + c$

21) The solution of $\frac{dy}{dx} = \frac{1+y^2}{sec\,x}$ is
1) $tan^{-1}y = cosx + c$
2) $tan^{-1}y = sinx + c$
3) $y^3 = cosecx + c$
4) $log(1 + y^2) = \cos x + c$

22) The solution of $\frac{dy}{dx} = e^{\log x}$ is
1) $2y = x^2 + c$ 2) $y = x^2 + c$
3) $y^2 = x + c$ 4) $xy = x^2 + c$

23) The solution of $\frac{dy}{dx} = \frac{x+x^2}{y-y^2}$ is
1) $3(y^2 - x^2) = 2(x^3 + y^3) + c$
2) $3(y^2 + x^2) = 2(x^3 + y^3) + c$
3) $x^2 - y^2 = x^3 + y^2 + c$
4) $x^2 + y^2 = x^3 + y^2 + c$

24) The solution of $(1 + e^x)ydy = e^xdx$ is
1) $y^2 = \log c(e^x + 1)$ 2) $\frac{y^2}{2} = \log ce^x$
3) $\frac{y^2}{2} = \log c\ (e^x + 1)$
4) $2y = \log c\ (e^x + 1)$

25) The solution of $ydx - xdy = 0$ is
1) $y^2 = cx$ 2) $y = cx^2$
3) $y = cx$ 4) $x^2 = cy$

26) The solution of the D.E $ydx - xdy + 3x^2y^2e^{x^3}dx = 0$ is
1) $x + e^{x^3} = cy$ 2) $x + ye^{x^3} - cy = 0$
3) $x - ye^{x^3} + c = 0$
4) $x + ye^{x^3} + cy^2 = 0$

27) When x=0, y=-1 the particular solution of the D.E $(1 + y^2)dx + (1 + x^2)dy = 0$ is
1) $x + y + xy = 1$ 2) $x + y + 1 = xy$
3) $x + y + xy + 1 = 0$
4) $x - y + xy = 1$

28) The solution of $e^x tanydx + (1 - e^x)sec^2ydy = 0$ is
1) $\tan y = c(1 - e^x)$
2) $\sec y = c(1 - e^x)$
3) $\tan y = (1 - e^x) = c$
4) $\sec y = 1 - e^x$

29) The solution of $3e^x cos^2ydx + (1 - e^x)\cot ydy = 0$
1) $tany = c(e^x - 1)$
2) $tan^2y = (e^x - 1)c$
3) $coty = c(e^x - 1)^2$
4) $tany = c(e^x - 1)^3$

30) Solution of the differential equation $\frac{y+sinxcos^2(xy)}{cos^2(xy)}dx + \left(\frac{x}{cos^2(xy)} + siny\right)dy = 0$ is
1) $\tan(xy) - cosx - cosy = c$
2) $\tan(xy) + cosx - cosy = c$
3) $\tan(xy) + cosx + cosy = c$
4) $\tan(xy) - cosx + cosy = c$

31) The population (x) in any year (t) is such that the rate of increase is proportional to the population then
1) x = ct 2) $x = ce^{kt}$
3) $x = ce^{-kt}$ 4) x = c

BASED ON HOMEGENOUS D.E

32) The solution of the differential equation $x^2dy + y(x + y)dx = 0$ is
1) $x^2y = c^2(2x + y)$
2) $xy^2 = c^2(2x + y)$
3) $x^2y = c^2(x + 2y)$
4) $xy^2 = c^2(x + 2y)$

33) The solution of $\frac{dy}{dx} = \frac{y}{x} + sin\left(\frac{y}{x}\right)$ is
1) $tan\left(\frac{y}{2x}\right) - cx = 0$
2) $tan\left(\frac{y}{x}\right) - cx = 0$
3) $tan\left(\frac{y}{2x}\right) + cx - x = 0$
4) $sin\left(\frac{y}{2x}\right) - cx = 0$

34) Solution of $y^2dx + (x^2 - xy + y^2)dy = 0$
1) $Tan^{-1}\left(\frac{x}{y}\right) + logy + c = 0$
2) $2Tan^{-1}\left(\frac{x}{y}\right) + logx + c = 0$
3) $log\left(y + \sqrt{x^2 + y^2}\right) + logy + c = 0$
4) $log\left(y - \sqrt{x^2 + y^2}\right) - logy + c = 0$

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For Feedback...
vijetha.nt@gmail.com

K. Kumar
Sr. Faculty
Hyderabad
94929 56214

BASED ON NON-HOMEGENOUS D.E

35) Solution of $\frac{dy}{dx} = \frac{x-2y+3}{2x+y-5}$
1) $x^2 - y^2 - 4xy + 6x + 10y = c$
2) $x^2 + y^2 + xy + x - 3y = c$
3) $x^2 - y^2 + 2xy - x + 3y = c$
4) $x^2 + y^2 - xy + x - 3y = c$

36) The substitution required to change $(3y - 7x + 7)dx + (7y - 3x + 3)dy = 0$ to a homogeneous differential equation is
1) $x = X + 1, y = Y$
2) $x = X, y = Y + 1$
3) $x = X + 1, y = Y + 1$
4) $x = X + 2, y = Y + 2$

INTEGRATING FACTORS OF DIFFERENTIAL EQUATION

37) The integrating factor of the differential equation $(1 - y^2)\frac{dx}{dy} + yx = ay\ (-1 < y < 1)$
1) $\frac{1}{y^2-1}$ 2) $\frac{1}{\sqrt{y^2-1}}$
3) $\frac{1}{1-y^2}$ 4) $\frac{1}{\sqrt{1-y^2}}$

38) I.F of $xlogx\frac{dy}{dx} + y = 2logx$
1) x 2) log x
3) $\log(\log x)$ 4) $\frac{2}{x}$

39) I.F of $(1 + x^2)\frac{dy}{dx} + y = e^{tan^{-1}x}$
1) $tan^{-1}x$ 2) $e^{tan^{-1}x}$
3) $\frac{1}{1+x^2}$ 4) Tan x

40) I.F of $\frac{dy}{dx} = \frac{x+y+1}{x+1}$
1) $\frac{1}{y+1}$ 2) $\frac{1}{x+1}$
3) $\log(x + 1)$ 4) $\log(y + 1)$

41) I.F of $\frac{dy}{dx} - ycot\,x = cosecx$ is
1) sin x 2) tan x
3) sec x 4) cosec x

42) Solution of $\frac{dy}{dx} + 2y = e^{-x}$ is
1) $ye^x = 1 + ce^{-x}$
2) $ye^{-x} = 1 + ce^{-x}$
3) $yx = e^{-x} + c$
4) $e^xy = e^{-x} + ce^{-2x}$

BERNOULLIS EQUATION

43) The transformed equation of $\frac{dy}{dx} + xin2y = x^3cos^2y$
1) $\frac{du}{dx} + \frac{u}{x^2} = x$ 2) $\frac{du}{dx} + ux = \frac{x^3}{2}$
3) $\frac{du}{dx} + 2ux = x^3$ 4) $\frac{du}{dx} + \frac{u}{x} = x^2$

Answer Key

1)	3	2)	2	3)	2	4)	2	5)	1
6)	1	7)	3	8)	2	9)	1	10)	1
11)	4	12)	1	13)	2	14)	1	15)	3
16)	1	17)	2	18)	1	19)	2	20)	1
21)	2	22)	1	23)	1	24)	3	25)	3
26)	2	27)	2	28)	1	29)	4	30)	1
31)	2	32)	1	33)	1	34)	1	35)	1
36)	1	37)	4	38)	2	39)	2	40)	2
41)	4	42)	1	43)	3				