



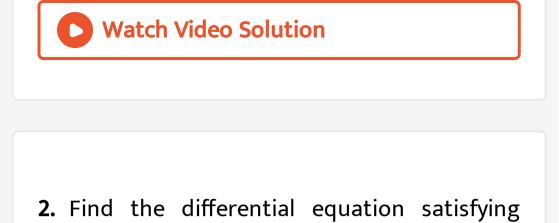
MATHS

BOOKS - MAXIMUM PUBLICATION

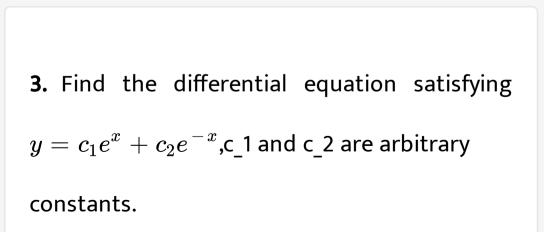
DIFFERENTIAL EQUATION



1. Find the differential equation satisfying $y = e^{2x}(a + bx)$, a and b are arbitrary constants.



 $y = e^x (a \cos x + b \sin x)$,a and b are arbitrary constants..







4. Form the differential equation representing

the family of curve given by $\left(x-a
ight)^2+2y^2=a^2$,a is a arbitrary

constants.

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5. Find the equation of a curve passing through

the point (0,-2) given that at any point (x,y)

on the curve, the product of the slope of its

tangent and y coordinate of the point is equal

to the x coordinate of the point.

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6. Form the DE representing the family of

parabolas having vertex at origin and axis

along positive direction of x-axis.

7. For the DE $xyrac{dy}{dx}=(x+2)(y+2)$,find the

solution curve passing through the point (1,-1).



8. Solve the initial value problem:

$$rac{dy}{dx} = y an 2x, \! y(0) = 2$$

9. Consider the differential equation given

below.

$$rac{d^4y}{dx^4} - \sin\!\left(rac{d^3y}{dx^3}
ight) = 0$$

write the order and degree of the DE(if

defined)



10. Find the Differential equation satisfying

the family of curves $y^2=aig(b^2-x^2ig)$,a and b

are arbitrary constants.





11. Find the Differential equation satisfying

the family of curves $y=ae^{3x}+be^{\,-2x}$,a

and b are arbitrary constants.

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12. Write the order and degree of the DE

$$\left[rac{dy}{dx}
ight]^2+rac{dy}{dx}-\sin^2 y=0$$

13. Consider the equation of all circles which pass through the origin and whose centres are on the x-axis.

Define the general equation of the circle.

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14. Consider the equation of all circles which pass through the origin and whose centres are on the x-axis.

Find the DE corresponding to the above

equation.



15. Find a particular solution satisfying the

given

condition.

$$ig(x^3+x^2+x+1ig)rac{dy}{dx}=2x^2+x$$

when y = 1, x = 0

16. Write the degree of the DE y' = 2xy.

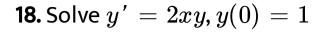
[0,1,2,3]

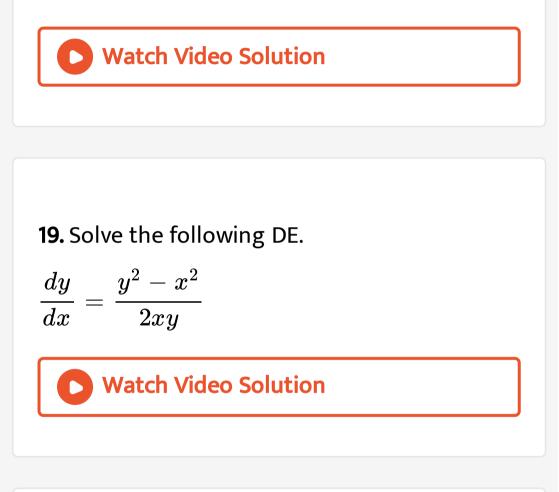
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17. Express y' = 2xy in the form Mdx = Ndy

where M is a function of x and N is the

function of y.





20. Solve the linear differential equation

$$xrac{dy}{dx}-y=(x-1)e^x$$



21. Choose the correct answer from the

bracket.

The solution of the differential equation

xdy + ydx = 0 represents

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22. Choose the correct answer from the

bracket.

The solution of the differential equation

xdy + ydx = 0 represents

A. A straight line passing through origin

- B. A rectangular hyperbola
- C. A parabola
- D. A circle whose centre is origin

Answer:

23. Choose the correct answer from the

bracket.

The solution of the differential equation

xdy + ydx = 0 represents



24. Choose the correct answer from the

bracket.

The solution of the differential equation

xdy + ydx = 0 represents





25. Form the DE of the family of circles

touching the x-axix at origin.

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26. Solve the DE
$$x^2 rac{dy}{dx} = x^2 - 2y^2 + xy$$

27. Choose the correct answer from the

bracket

The DE
$$rac{dy}{dx}+rac{y}{x}=e^{x}$$
,x>0 is of order [0,1,2,3]

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28. Choose the correct answer from the bracket

The integrating factor of
$$\displaystyle rac{dy}{dx} + \displaystyle rac{y}{x} = e^x$$
 ,is..

B. e^x

С. -х

D. -е^х

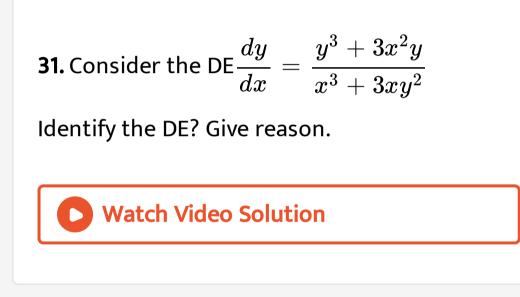
Answer:

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29. Solve
$$\displaystyle rac{dy}{dx} + \displaystyle rac{y}{x} = e^x$$

30. Solve the DE
$$rac{dy}{dx}=rac{x+y}{x-y}$$





32. Consider the DE
$$rac{dy}{dx}=rac{y^3+3x^2y}{x^3+3xy^2}$$

Explain the method of solving the DE.



33. Consider the
$$\mathsf{DE} \frac{dy}{dx} = \frac{y^3 + 3x^2y}{x^3 + 3xy^2}$$
 Solve the DE.

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34. Consider the D.E
$$rac{dy}{dx}+rac{y}{x}=x^2$$

Find degree and order of DE.

35. Consider the D.E
$$rac{dy}{dx}+rac{y}{x}=x^2$$

Solve the D.E.

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36. Consider the D.E
$$rac{dy}{dx}+rac{y}{x}=x^2$$

Find the particular solution when

$$x = 1, y = 1$$

37. Consider the equation. $rac{dy}{dx} + y = \sin x$

What is the order and degree of this

equation?



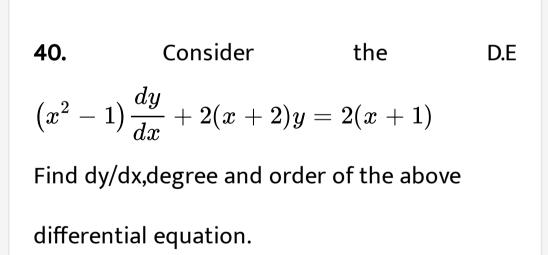
38. Consider the equation.
$$rac{dy}{dx} + y = \sin x$$

Find the integrating factor.

39. Consider the equation. $rac{dy}{dx} + y = \sin x$

Solve this equation.







Find the integrating factor of the above

diffrential equation.



42. Consider the D.E
$$ig(x^2-1ig)rac{dy}{dx}+2(x+2)y=2(x+1)$$
Solve

the differential equation.

43. The degree of the differential Equation

$$rac{d^2y}{dx^2}+\cosiggl(rac{dy}{dx}iggr)=0$$
 is

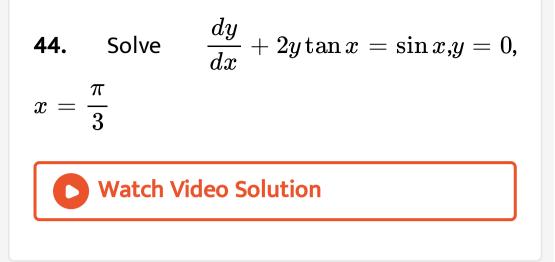
A. 2

B. 1

C. 0

D. Not defined

Answer:



45. The order of the differential equation

$$x^4rac{d^2y}{dx^2}=1+\left(rac{dy}{dx}
ight)^3$$
 is



46. Find the particular solution of the

differential equation

$$ig(1+x^2ig)rac{dy}{dx}+2xy=rac{1}{1+x^2}$$
 ,when $y=0$,

x = 1.

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47. Form a differential equation of the family

of circles having centre on y-axis and

radius 3 units.



48. Consider the Differential equation

$$rac{d^2y}{dx^2}+y=0$$

Write the order and degree.



49. Consider the Differential equation

$$rac{d^2y}{dx^2}+y=0$$

Verify that $y = a \cos x + b \sin x$ where

a,b in R is a solution of the given DE.



50. If
$$\cos x rac{dy}{dx} + y \sin x = an^2 x$$
 is a DE,then

Find its order and degree.

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51. If
$$\cos x rac{dy}{dx} + y \sin x = an^2 x$$
 is a DE,then

Find its general solution.

52. Write the order and degree of the DE

$$\left[rac{dy}{dx}
ight]^2+rac{dy}{dx}-\sin^2 y=0$$

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53. Solve the
$$\mathsf{DE} rac{dy}{dx} + 2y an x = \sin x$$

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54. The general solution of the DE

dy/dx= e^x-y is

A.
$$e^y + e^x = c$$

$$\mathsf{B.}\,e^y-e^x=c$$

$$\mathsf{C}.\,e^{-y}-e^{-x}=c$$

D.
$$e^{-y} + e^{-x} = c$$

Answer:



55. Solve the DE`dy/dx= $2xy/(1+x^2)+x^2+2$

56. Consider the family of all circles having their centre at the point (1,2).Write the equation of the family.Write the

corresponding differential equation.

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57. Write the integrating factor of the

differential equation

`cosxdy/dx+y=sinx



58. Write the order and degree of the

differential equations.

$$xyigg(rac{d^2y}{dx^2}igg)^2+xigg(rac{dy}{dx}igg)^3-yrac{dy}{dx}=0$$

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59. Find the general solution of the

differential equation $y \log y dx - x dy = 0$

60. Find the integrating factor of the

differential equation $x \frac{dy}{dx} - y = 2x^2$

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61. $y = a \cos x + b \sin x$ is the solution of the

differential equation

$$rac{d^2y}{dx^2}+y=0$$

62. $y = a \cos x + b \sin x$ is the solution of the

differential equation

$$rac{d^2y}{dx^2}+y=0$$



63. Verify that the function
$$y = a \cos x + b \sin x$$
 is the solution of the differential equation $rac{d^2 y}{dx^2} + y = 0$

64. $y = a \cos x + b \sin x$ is the solution of the

differential equation

$$rac{d^2y}{dx^2}+y=0$$



65. Find the solution of the differential equation $x \frac{dy}{dx} + 2y = x^2$,(x!=0) given that y = 0 when x = 1

66. Form the DE corresponding to the

Function $y = ae^x + be^{2x}$

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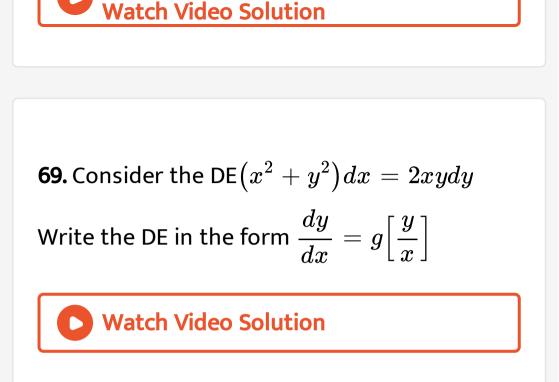
67. Solve
$$x rac{dy}{dx} = x + y$$

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68. Form the DE corresponding to the

function $xy = c^2$

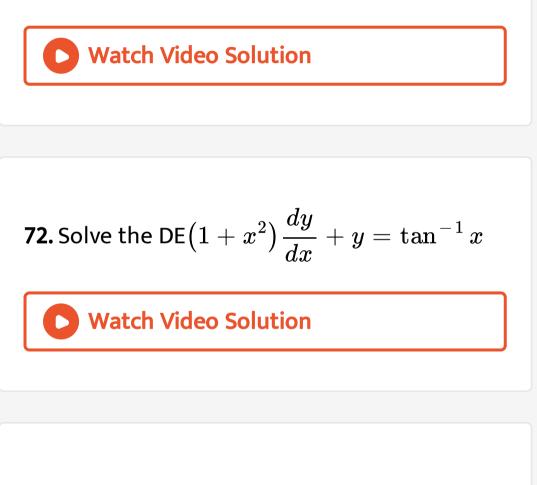




70. Consider the
$$\mathsf{DE}ig(x^2+y^2ig)dx=2xydy$$

Solve the DE completely

71. Equation of a circle touching the y-axis at origin is $x^2 + y^2 - 2ax = 0$.Find the DE of all such circles.



73. Solution of the DE y' - y = 0 is $y = \dots$.

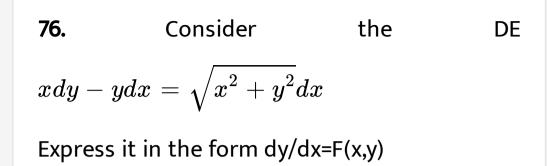
74. Solve the
$$\mathsf{DE} rac{dy}{dx} + y \sec x = \tan x$$

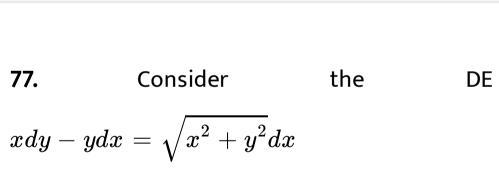
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75. Form the DE of the family of ellipse

having foci on the x-axis and centre at

the origin.





Find the general solution.

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78. Prove that the DE is

$$ig(3xy+y^2ig)dx+ig(x^2+xyig)dy=0$$

a homogeneous DE of degree0.

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79. Solve the DE

$$ig(3xy+y^2ig)dx+ig(x^2+xyig)dy=0$$

80. Consider the differential equation

$$rac{dy}{dx} - 3\cot xy = \sin 2x.$$

Find its integrating factors.



81. Consider the differential equation

$$rac{dy}{dx} - 3\cot xy = \sin 2x.$$

Find its solution, given that y=2

When $x = \frac{\pi}{2}$.

