
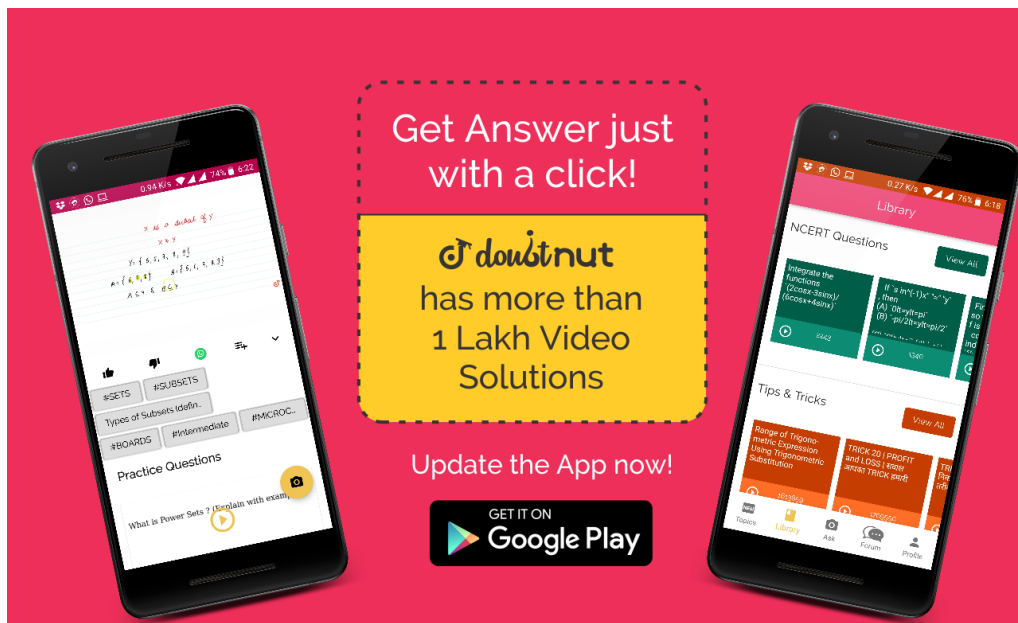


Ques No.	Question
1 - 10396	<p>CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS</p> <p>Solve the following differential equation :</p> $(1 + y^2)(1 + \log x)dx + x \, dy = 0$ <p><a href="#">Click to watch Free Video Solution of this question on Doubtnut</a></p>
2 - 10399	<p>CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS</p> <p>Form the differential equation of the family of curves <math>y = A e^{Bx}</math> where A and B are constants.</p> <p><a href="#">Click to watch Free Video Solution of this question on Doubtnut</a></p>
3 - 10412	<p>CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS</p> <p>If <math>y = a \cos(\log x) + \sin(\log x)</math>, prove that</p> $\frac{x^2 d^2 y}{dx^2} + x \frac{dy}{dx} + y = 0$ <p><a href="#">Click to watch Free Video Solution of this question on Doubtnut</a></p>
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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation :

4 - 10419

$$(x^2 - 1) \frac{dy}{dx} + 2xy = \frac{2}{(x^2 - 1)}$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differentia equation:

5 - 10480

$$(y^2 - x^2) dy = 3xy dx$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Verify that  $y = A \cos x - B \sin x$  is solution

6 - 10481

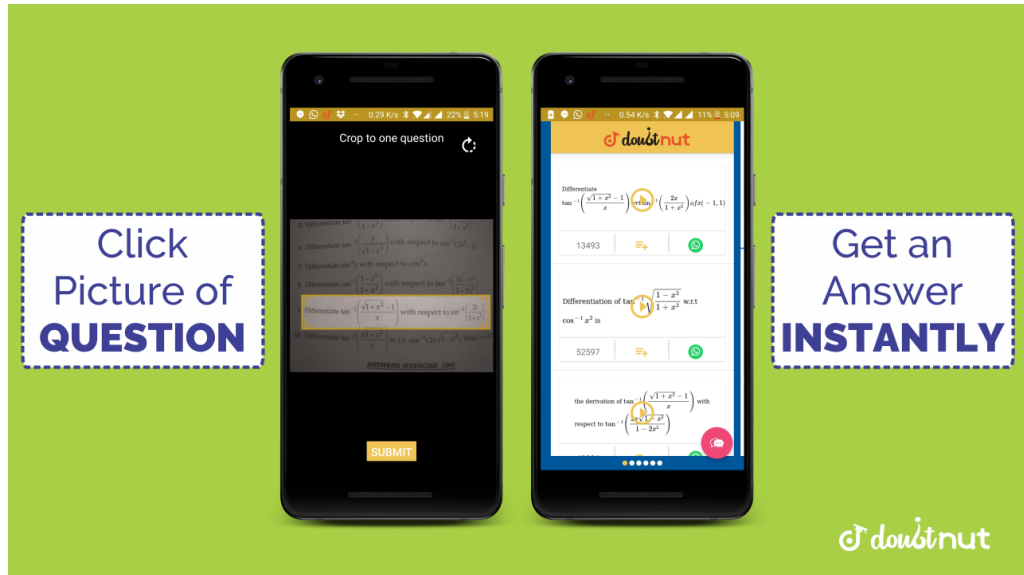
of the differential equation.  $\frac{d^2y}{dx^2} + y = 0$

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Solving the following differentia equation:

$$\sin x \frac{dy}{dx} + \cos x y = \cos x \sin^2 x$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

If  $y = \sqrt{x} + \frac{1}{x}$ , Show that

8 - 10502

$$2x \frac{dy}{dx} + y = 2\sqrt{x}$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

If  $y = \sin(\log x)$ , prove that

9 - 10508

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

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Solve the following differential equation :

$$x \cos y \, dy = (x e^x \log x + e^x) dx$$

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Solve the following differential equation :

$$\frac{dy}{dx} + 2y = 6e^x$$

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Form the differential equation of the family of

$$\text{curves } y = A \cos 2x + B \sin 2x, \text{ where } A$$

and B are constants.

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

13 - 10535

$$x \frac{dy}{dx} + y = x \log x; \quad x \neq 0$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Form the differential equation representing the parabolas having vertex at the origin and axis along positive direction of x-axis.

14 - 10551

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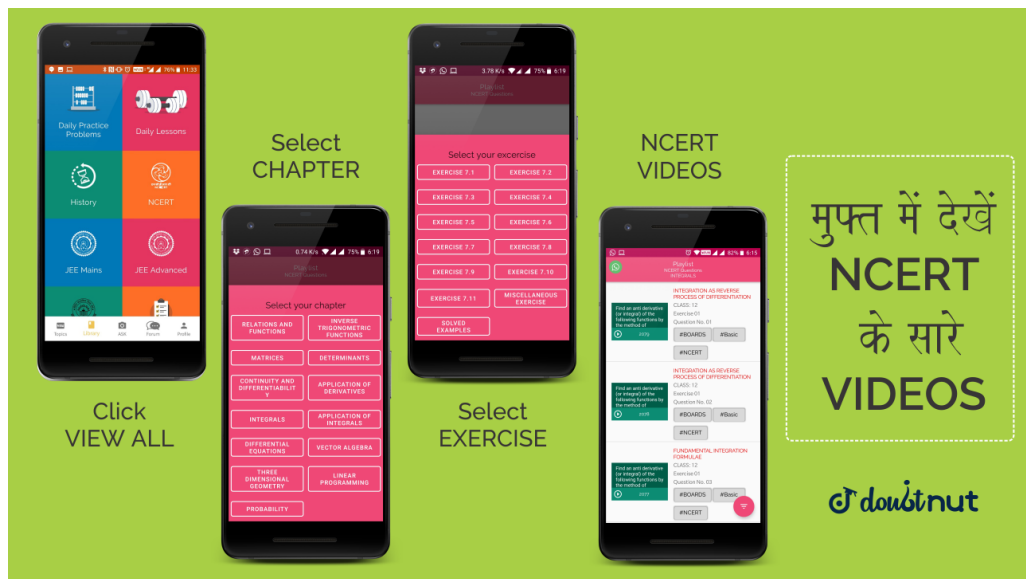
CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

15 - 10552

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

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

16 - 10564

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

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

17 - 10574

$$(x^2 - y^2) dx + 2xy dy = 0 \text{ given that } y = 1$$

when  $x = 1$

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18 - 10575

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

$$\frac{dy}{dx} = \frac{x(2y-x)}{x(2y+x)}, \text{ if } y = 1 \text{ when } x = 1$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

If  $y = e^a \cos^{(-1)}x$ ,  $-1 \leq x \leq 1$ , show

19 - 10611

$$\text{that } (1 - x^2) \frac{d^2y}{dx^2} - x \frac{dy}{dx} - a^2y = 0$$

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20 - 10612

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If  $x \sqrt{1+y} + y \sqrt{1+x} = 0$ ,  $-1$

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Write the degree of the differential equation

21 - 10650

$$x^3 \left( \frac{d^2y}{dx^2} \right)^2 + x \left( \frac{dy}{dx} \right)^4 = 0.$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Write the differential equation representing the

22 - 10663

family of curves  $y = mx$ , where  $m$  is an arbitrary constant.

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23 - 10666

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Show that the differential equation

$$2ye^{\frac{x}{y}} dx + (y - 2xe^{xy}) dy = 0 \text{ is}$$



homogeneous. Find the particular solution of this differential equation, given that  $x = 0$  when  $y = 1$ .

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Let A be a square matrix of order n then the sum of the product of elements of any...



24 - 10680

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Find the particular solution of this differential equation

$$\frac{x^2 dy}{dx} - xy = 1 + \cos\left(\frac{y}{x}\right), \quad x \neq 0. \text{ Find}$$

the particular solution of this differential

equation, given that when  $x = 1$ ,  $y = \frac{\pi}{2}$ .

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Solve the following differential equation:

25 - 10693

$$\frac{dy}{dx} + y = \cos x - \sin x$$

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Find the particular solution, satisfying the given condition, for the following differential equation:

26 - 10694

$$\frac{dy}{dx} - \frac{y}{x} + \operatorname{cosec} \left( \frac{y}{x} \right) = 0; y = 0 \text{ when } x = 1$$

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Solve the following differential equation:

27 - 10701

$$\frac{(x^2 - 1)dy}{dx} + 2xy = \frac{1}{x^2 - 1}; |x| \neq 1$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

28 - 10702

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

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Form the differential equation representing the family of ellipses foci on x-axis and centre at the origin.

29 - 10708

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30 - 10714

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

$$2x^2 \frac{dy}{dx} - 2xy + y^2 = 0$$

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Find the particular solution of the following differential equation:

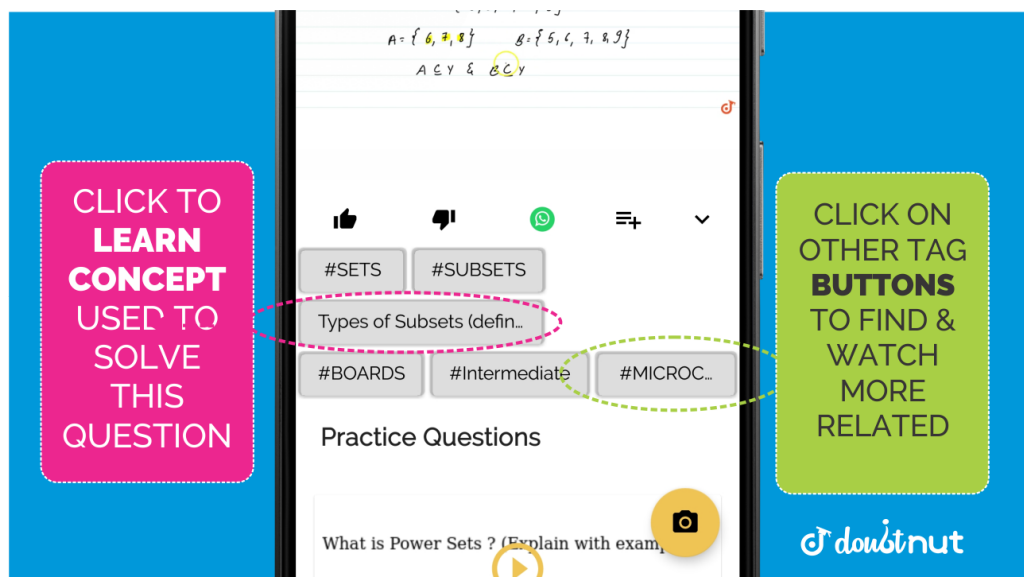
31 - 10715

$$\frac{dy}{dx} = 1 + x^2 + y^2 + x^2y^2, \text{ given that}$$

$$y = 1 \text{ when } x = 0.$$

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32 - 10738

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

$$(x^3 + y^3)dy - x^2ydx = 0$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

33 - 10745

$$(1 + x^2)dy + 2xy dx = \cot x dx; x \neq 0$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Show that the differential equation

34 - 10752

$$\frac{(x - y)dy}{dx} = x + 2y, \text{ is homogeneous and}$$

solve it.

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35 - 10764

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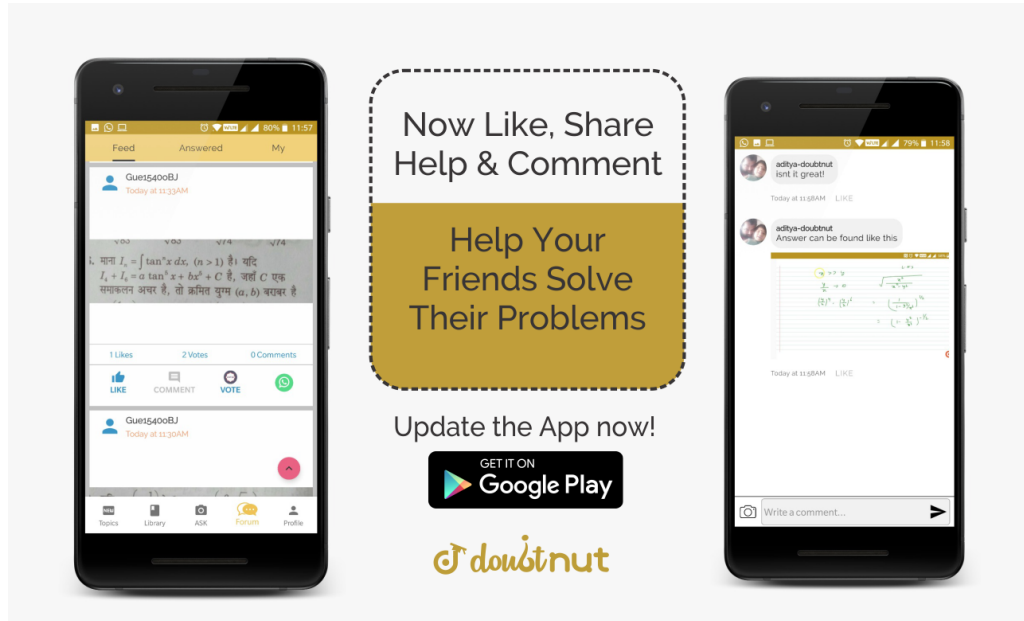
Find the particular solution of the differential equation.

$$\frac{dy}{dx} + y \cot x = 4x \operatorname{cosec} x, \quad (x \neq 0),$$

given that  $y = 0$  when  $x = \frac{\pi}{2}$ .

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**CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS**

36 - 10769

What is the degree of the following differential

equation?  $5x \left( \frac{dy}{dx} \right)^2 - \frac{d^2 y}{dx^2} - 6y = \log x$

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**CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS**

37 - 10808

Solve the following differential equation:

$$y dx + x \log \left( \frac{y}{x} \right) dy = 2x dy$$

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Find the particular solution of the following differential equation satisfying the given

condition :  $\frac{(3x^2 + y) dx}{dy} = x, x > 0$ , when  $x = 1, y = 1$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

If  $y = 3 \cos(\log x) + 4 \sin(\log x)$ , then show

39 - 10834

that  $x^2 \frac{d^2 y}{dx^2} + \frac{dy}{dx} + y = 0$

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40 - 10885

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Solve the following differential equation:

$$x dy - y dx = \sqrt{x^2 + y^2} dx$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

41 - 10886

$$(y + 3x^2) \frac{dx}{dy} = x$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

42 - 10898

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

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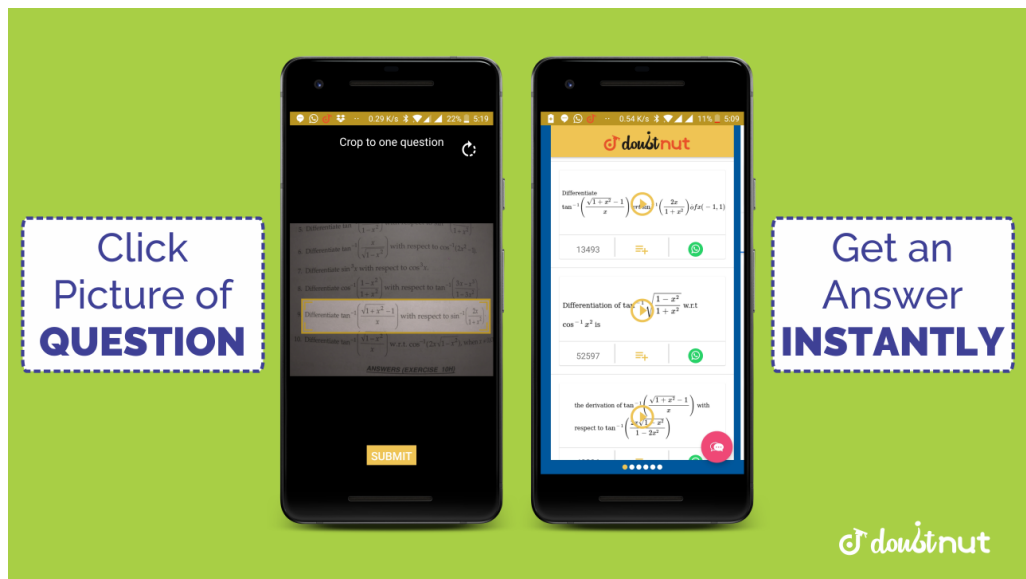
Solve the following differential equation:

43 - 10899

$$x \frac{dy}{dx} = y - x \tan\left(\frac{y}{x}\right)$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

44 - 10914

$$\left[ \frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}} \right] \frac{dx}{dy} = 1, x \neq 0$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

45 - 10915

$$3e^x \tan y \, dx + (2 - e^x) \sec^2 y \, dy = 0, \text{ given}$$

that when  $x = 0, y = \frac{\pi}{4}$ .

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46 - 10941

CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

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

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the following differential equation:

47 - 10947

$$e^x \tan y dx + (1 - e^x) \sec^2 y dy = 0$$

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48 - 10957

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Find the particular solution of the differential equation satisfying the given conditions:

$$x^2 dy + (xy + y^2) dx = 0; y = 1 \text{ when } x = 1.$$

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

49 - 10962  
Find the particular solution of the differential equation

$$x(x^2 - a) \frac{dy}{dx} = 1; \quad y = 0 \text{ when } x = 2$$

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50 - 10963  
Form the differential equation of the family of circles in the second quadrant and touching the coordinate axes.

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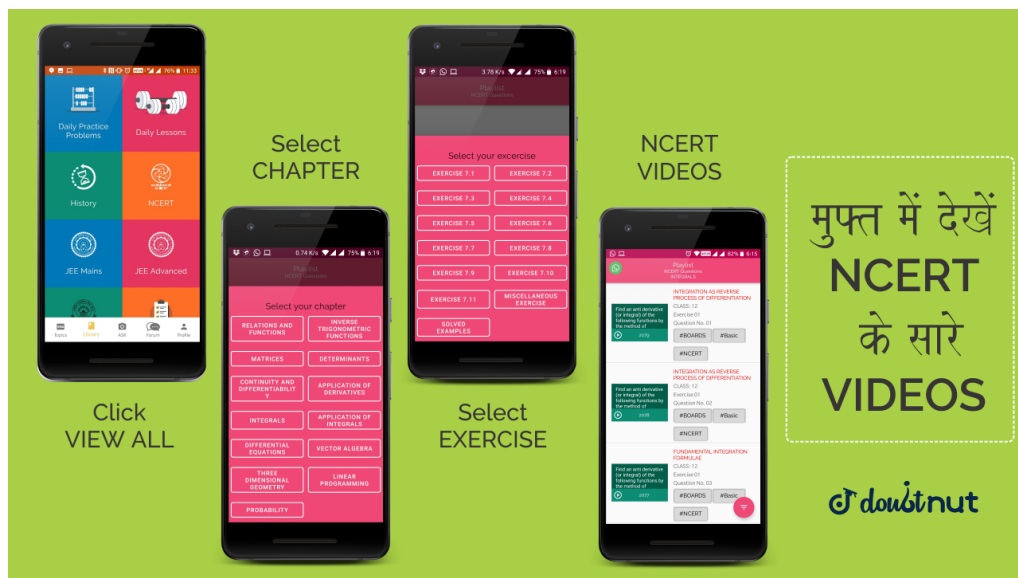
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51 - 10974  
Write the differential equation formed from the equation  $y = mx + c$ , here  $m$  and  $c$  are

arbitrary constants.

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**CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS**

Find the particular solution of the differential

equation:  $(1 + e^{2x})dy + (1 + y^2)e^x dx = 0$ ,

given that  $y = 1$ , when  $x = 0$ .

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52 - 10999

**CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS**

Find the particular solution of the differential

equation satisfying the given conditions:

53 - 11061

$$\frac{dy}{dx} = y \tan x, \text{ given that } y = 1 \text{ when } x = 0$$

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Find the general solution of the differential

54 - 11062

$$\text{equation } x \log x \frac{dy}{dx} + y = \frac{2}{x} \log x$$

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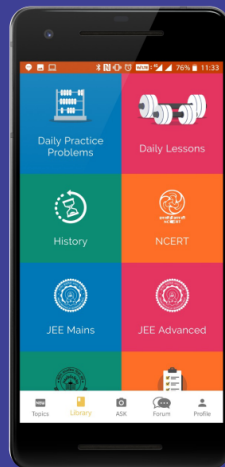
Solve the differential equation

55 - 13238

$$x \frac{dy}{dx} + y = x \cos x + \sin x, \text{ given}$$
$$y\left(\frac{\pi}{2}\right) = 1$$

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56 - 13247

Find the particular solution of the differential

$$\text{equation } x \frac{dy}{dx} = y + x \operatorname{cosec} \left( \frac{y}{x} \right) = 0;$$

given that  $y = 0$  when  $x = 1$ .

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57 - 13255

Find the particular solution of the differential

$$\text{equation } e^x \sqrt{1 - y^2} dx + \frac{y}{x} dy = 0, \text{ given}$$

that  $y = 1$  when  $x = 0$

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58 - 13282

Solve for  $x$ :

$$2 \tan^{-1}(\cos x) = \tan^{-1}(2 \operatorname{cosec} x)$$

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59 - 13297

If  $y(x)$  is a solution of the differential equation

$$\left( \frac{2 + \sin x}{1 + y} \right) \frac{dy}{dx} = -\cos x \text{ and } y(0) = 1,$$

then find the value of  $y\left(\frac{\pi}{2}\right)$ .

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CLASS 12 BOARDS: MOST IMPORTANT QUESTIONS - Chapter 9. DIFFERENTIAL EQUATIONS

Solve the differential equation

$$(x^2 - y)dy + (y^2 + x^2y^2)dx = 0, \text{ given}$$

that  $y = 1$ , when  $x = 1$ .

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