

CLASS 12

MATHEMATICS

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NCERT Solutions for Class 12 Mathematics Chapter 9: Differential Equations – Free PDF Download

Chapter 9 of Class 12 Maths is Differential Equations. It covers the order and degree of differential equations, forming them, and solving first-order first-degree equations by variable separation, homogeneous methods, and linear equations. These Class 12 Mathematics Chapter 9 solutions are also useful as quick revi...

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Chapter 9 of Class 12 Maths is Differential Equations. It covers the order and degree of differential equations, forming them, and solving first-order first-degree equations by variable separation, homogeneous methods, and linear equations. These Class 12 Mathematics Chapter 9 solutions are also useful as quick revision notes before exams.

Basic Definitions

A **differential equation** involves derivatives of a dependent variable with respect to an independent variable. The **order** is the highest derivative present; the **degree** is the power of the highest-order derivative (when the equation is a polynomial in derivatives).

Formation of Differential Equations

Given a family of curves with n arbitrary constants, differentiating n times and eliminating the constants gives a differential equation of order n .

Variable Separable Method

If the equation can be written as $f(y)dy = g(x)dx$, integrate both sides separately: $\int f(y)dy = \int g(x)dx + C$.

Homogeneous Differential Equations

An equation $dy/dx = f(x, y)$ is **homogeneous** if $f(\lambda x, \lambda y) = f(x, y)$. Solved by substituting $y = vx$ (so $dy/dx = v + x dv/dx$), converting to a variable-separable form in v and x .

Linear Differential Equations

A **linear equation** has the form $dy/dx + Py = Q$ (P, Q functions of x only). Solved using the **integrating factor** $IF = e^{\int P dx}$; the solution is $y \cdot IF = \int (Q \cdot IF) dx + C$.

Class 12 Mathematics Chapter 9 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the [Class 12 Mathematics Chapter 9 Extra Questions](#) and [Class 12 Mathematics Chapter 9 Revision Notes](#) for quick revision and extra practice.

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