

NCERT Solutions for Class 12th Maths

Chapter 9 – Differential Equations

Exercise 9.1

Question 1:

Determine order and degree(if defined) of differential equation $\frac{d^4 y}{dx^4} + \sin(y''') = 0$

Answer

$$\begin{aligned}\frac{d^4 y}{dx^4} + \sin(y''') &= 0 \\ \Rightarrow y'''' + \sin(y''') &= 0\end{aligned}$$

The highest order derivative present in the differential equation is y'''' . Therefore, its order is four.

The given differential equation is not a polynomial equation in its derivatives. Hence, its degree is not defined.

Question 2:

Determine order and degree(if defined) of differential equation $y' + 5y = 0$

Answer

The given differential equation is:

$$y' + 5y = 0$$

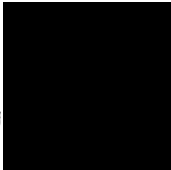
The highest order derivative present in the differential equation is y' . Therefore, its order is one.

It is a polynomial equation in y' . The highest power raised to y' is 1. Hence, its degree is one.

Question 3:

Determine order and degree(if defined) of diff

Answer


$$\left(\frac{ds}{dt}\right)^4 + 3s \frac{d^2 s}{dt^2} = 0$$