

CLASS 12

MATHEMATICS

NCERT SOLUTIONS

NCERT Solutions for Class 12 Mathematics Chapter 5: Continuity and Differentiability – Free PDF Download

Complete, verified solutions to the NCERT Class 12 Maths Chapter 5 (Continuity and Differentiability) exercise questions. These Class 12 Mathematics Chapter 5 solutions are also useful as quick revision notes before exams.

Contents

NCERT Exercise Solutions

Differentiation Rules Used Throughout the Chapter

Class 12 Mathematics Chapter 5 – Notes and Extra Questions

Complete, verified solutions to the NCERT Class 12 Maths Chapter 5 (Continuity and Differentiability) exercise questions. These Class 12 Mathematics Chapter 5 solutions are also useful as quick revision notes before exams.

NCERT Exercise Solutions

5.1 Prove that the function $f(x)=5x-3$ is continuous at $x=0$, at $x=-3$ and at $x=5$.

Ans: f is a polynomial, hence continuous everywhere. At $x=0$: $\lim_{x \rightarrow 0} f(x)=f(0)=-3$. At $x=-3$: $\lim_{x \rightarrow -3} f(x)=f(-3)=-18$. At $x=5$: $\lim_{x \rightarrow 5} f(x)=f(5)=22$. In each case $LHL=RHL=f(c)$, so f is continuous at all three points.

5.2 Examine the continuity of the function $f(x)=2x^2-1$ at $x=3$.

Ans: $f(3)=2(9)-1=17$. $\lim_{x \rightarrow 3} f(x)=2(9)-1=17$. Since $\lim_{x \rightarrow 3} f(x)=f(3)$, f is continuous at $x=3$.

5.3 Find all points of discontinuity of f , where $f(x) = 2x+3$ if $x \leq 2$, $2x-3$ if $x > 2$.

Ans: At $x=2$: $LHL=2(2)+3=7$, $RHL=2(2)-3=1$. Since $LHL \neq RHL$, f is discontinuous at $x=2$. Continuous everywhere else (both pieces are polynomials).

5.4 Discuss the continuity of the function $f(x)=x^n$ (n a positive integer).

Ans: $f(x)=x^n$ is a polynomial function, and every polynomial function is continuous at every real number, so f is continuous everywhere.

5.5 Is the function defined by $f(x)=|x|$ a continuous function?

Ans: Yes. $f(x)=x$ for $x \geq 0$ and $f(x)=-x$ for $x < 0$.