

FAQ's

1. What do you mean maximum value of a function?

Answer:

A function $f(x)$ is said to have maximum value at $x=a$ if $f(a)$ is greater than any other value of $f(x)$ in the neighborhood of $x=a$. hence the point $x=a$ is called point of maxima.

2. How will you find the maximum value of a mathematical function?

Answer:

A function $f(x)$ is said to have maximum at $x=a$ if $f(a)$ is less than any value of $f(x)$ in neighborhood of $x=a$. Here point $x=a$ is called point of maximum.

3. Give the conditions for maximum and minimum values of a function.

Answer:

The points at which the function becomes maximum or minimum values, tangents to the curve are always parallel to x axis.

So the necessary condition of maxima and minima is that $\frac{dy}{dx}=0$.

4. How first derivative test helps to find the maximum/minimum of a function?

Answer:

The function $f(x)$ has maxima/minima at $x=a$ if

- I. If $f'(x)=0$ at $x=a$
- II. If $\frac{dy}{dx}$ changes its sign from +ve to -ve in neighborhood of $x=a$ than $x=a$ is point of maxima.
- III. If $\frac{dy}{dx}$ changes its sign from -ve to +ve in neighborhood of $x=a$ than $x=a$ is a point of minima.

5. How second derivative test helps to find the maxima or minima of a function?

Answer:

The function $f(x)$ maximum at $x=a$

I. $F'(x)=0$ at $x=a$

II. $\left. \frac{d^2y}{dx^2} \right|_{x=a} < 0$

If $f(x)$ is maximum at $x=a$ if

III. $F'(x)=0$ at $x=a$

IV. $\left. \frac{d^2y}{dx^2} \right|_{x=a} > 0$