



# Introduction to Maxima minima volume 1

LESSON 1 OF 1



Download the **Unacademy Learning App** to watch this and over **200k** more lessons in UPSC, SSC CGL, GATE, CAT and many more categories.





# Referral Code for Live Sessions



All Structured  
live courses

|

Complete Physics  
Chemistry & Math

|

Weekly quizzes  
& doubt clearing



**Manoj Chauhan**  
Referral Code: **MCSir**

**Get 10% Instant Discount**



# Application of Derivative- Maxima & Minima

**JEE Advanced**

**Success Mantra**  
**KEEP Thinking**  
**(Problems only :D)**

**Prepared By :**  
**Manoj Chauhan**  
**IIT Delhi**





# About Me

- **Star Educator (Maths), Unacademy.**
- **Ex Sr. faculty at Vibrant Classes (Kota) (2013-2018)**
- **Online Maths faculty at Etoos India. (2011-2013)**
- **Ex Sr. faculty at Bansal Classes (Kota) (2008-2011)**
- **Ex Sr. faculty at Career Point (Kota) (2007-2008)**
- **B.Tech, IIT Delhi (2003-2007)**
- **Teaching Experience of more than 11.5 years.**



## **For guaranteed Success in JEE Main and Advanced.**

- **Encourage the educator to make more such courses**
- **Enrol for this Course (Free).**
- **Recommend Lessons to your friends.**
- **Like & Share the lessons and provide your feedback.**
- **Review the Course & Rate it 5 Star.**
- **In the comments section, ask your doubts.**
- **Get timely notified of new courses**
- **Join live sessions on Plus platform.**



## **Already taught on Unacademy**

- **Functions, ITF, Limits, Continuity, Differentiability, Methods of Differentiation, Indefinite Integration, Definite Integration, Tangent and Normal, Monotonicity.**
- **Theory, Solved Examples, Illustrations, Problems (Easy, Medium, Difficult) Previous Year Questions of the Last 40 years.**



# What's on Unacademy Plus by Manoj Chauhan Sir ???

## ➤ Live Courses going on Unacademy

- Complete Calculus
- EVOLVE : Complete course for Class XII<sup>th</sup>

**Unit 1 - Functions**

**Start Date : 10th May.**

- EMERGE : Complete course for Class XI<sup>th</sup>

**Unit 1 - Fundamental of Mathematics**

**Start Date : 13th May.**



## Upcoming Courses

- **EVOLVE : Complete course for Class XII<sup>th</sup>**  
**Unit 2 - Inverse Trigonometric Functions, Determinants**  
**Start Date : 3rd June.**
- **EMERGE : Complete course for Class XI<sup>th</sup>**  
**Unit 2 - Compound Angles, Trigonometric Equations**  
**Start Date : 5th June.**
- **Complete course for Class XIII<sup>th</sup>**  
**Unit 1 - Trigonometry, Quadratic Equations, Sequence Series**  
**Start Date : 3rd June.**
- **Complete course for Class X<sup>th</sup>**  
**Unit 1 - Polynomials, Linear Equations in Two Variables**  
**Start Date : 3rd June.**



## What should be the Student's Strategy ?

- ❖ **Revise** what has been done in the previous lectures.
- ❖ **Writing Notes.** Making notes while the lecture is an important task. Don't just listen to the video. Write each and everything. Keep pen and paper ready.
- ❖ **Pause the video** according to your speed. And learning ability.
- ❖ **Draw graphs** timely.
- ❖ **Try to solve** before I solve.
- ❖ **Follow** the courses regularly.
- ❖ **Practice Assignments.**



# Important Features of My Lectures

- ❖ **More than one approach** to solve.
- ❖ **Well laid out plan.**
- ❖ **Complete discussion** of each and every topic.
- ❖ All types of questions covered :  
**Easy, Medium, Difficult, Super Difficult.**
- ❖ **Previous year problems of the last 40 years** discussed.
- ❖ Target is **IIT Advanced**, also helps you in all the **Engineering entrance exams** as well as for boards.
- ❖ Making Maths **interesting and entertaining.**



# Testimonials



Aman Bhargava • about 3h ago



Sir! A question of type  $f(a+b)=f(a)f(b)$  came directly from your notes 9th April morning shift! You are great



dhaval5611 Best maths teacher i have got im one of your virtual student



10w 1 like Reply



crati\_avi And a similar problem regarding even and odd function ,which you taught us in vibrant came in yesterday's Evening shift.



1w 2 likes Reply



Nilabha Das  
Dedicated on 3 Feb 2019

*"Thank you for your courses Sir, in addition to being extremely fulfilling in them, putting in so much of personal attention in the form of humour makes everyone bound to be focused. "*

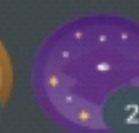


Saurav Choudhary  
reviewed on April 18, 2019

The best teacher in INDIA, believe me I know him from around 1 year, if anyone of you don't know him ask about him in Kota, then u will come to know that you are blessed that u r learning from such a superb teacher. thank you again for such a wonderful course



## Dedications



Brown Hat

Dedicated at 10k minutes



Zaira Sheikh  
Dedicated on 4 Apr 2019

*"Sir. You are next level maths teacher. Your way of teaching is so simple and humorous that none could be bored. Your way of teaching literally made Maths my Favourite subject. You not only teach. "*



vijay jain 3 weeks ago

Thank you sir ,sir plz upload other videos lecture of class 12 and 11




REPLY

## Dedicated to Manoj Chauhan


"Sir you are great math tutor.. aapke function vol me se 2ques. Mains me aaye the aap bhut ache teacher hai. Next bar jee2020 bhi aap kuch ques bta dijiye jisse bihar ke bchhe mains nikal payenge."

by Shubham Rangrajan




 Tarsem Kumar • about 2h ago  
★★★★★  
I don't have words for the work of this teacher. He is a fabulous teacher and doing a very good job for student who can't afford coaching and all. Personally I am in a coaching institute but for math I only follow sir and his instruction. Thank you so much sir


0

 suryasingh885 ☐☐Tbh sir you are a self institution ♥♥and I like these words specially you keep on repeating "theek hai sab"☐


3w 3 likes Reply

 mattstonie36 Yes sir you teach fabulous and keep up the great work

3w 1 like Reply

 agniveshpandita Sir I feel confident in maths because of ur motivation.. thank u sir....


3w 1 like Reply

 SHIBU 1 week ago  
Best teacher I've ever encountered ☐

7

 aryan raj 5 days ago  
Upload more video on mc sir


3

 Dr. Arshad Ali : Teacher & Motivational Speaker 6 days ago  
You are best teacher.


3

 Chaitanya Gadekar 1 week ago  
Sir Ur Awesomeeee


2

 om\_roy18 Sir u r great..... U r my inspiration..


1w 1 like Reply

 \_\_.1nt3ns3le0\_007.\_\_ Sir I have your Etoos videos sir.. you are really great... Apke videos dekhe tho maths asan hogaya... Please bless me sir.. aap mahan ho sir

1w 1 like Reply


 Anand Malviya 2 weeks ago  
sir literally you are the best and the most famous mathematics teacher of india...

REPLY

 Akshay s 2 weeks ago  
Mc sir ki jai ho!! Bangalore aakash fans sir

6

View 4 replies

 Kritika kumari 3 weeks ago (edited)  
♥ Tysm sir you're best this is not the best this is the bestest approach ♥

1

REPLY



# Contents

- ❖ Introduction to Maxima and Minima
- ❖ Method of Finding extrema of continuous functions
  - (a) First Derivative Test
  - (b) Second Derivative Test
- ❖ Concept of Global Maximum/Minimum
- ❖ Maximum and Minimum in Discontinuous Function
- ❖ Application of Maxima and Minima
- ❖ Drawing the graph of Rational Function
- ❖ Geometrical Applications
- ❖ Optimization
- ❖ Shortest distance between two curves or curve and a line or curve and a point.
- ❖ Polar coordinates
- ❖ Determining Nature of Roots of Cubic Polynomial
- ❖ Significance of the sign of 2nd order derivative and points of inflection.