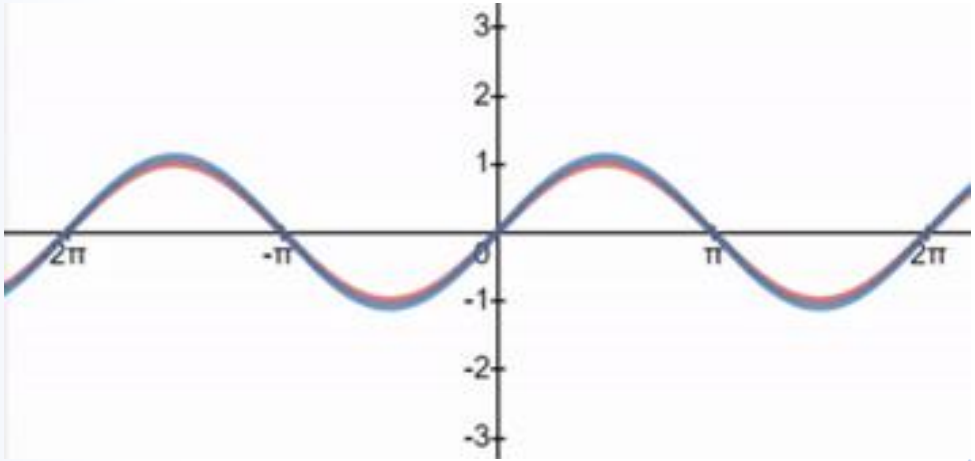
jee LIVE daily 3.0

# Graphs of Trigonometric Functions

## Trigonometry 14



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## Sameer Chincholikar

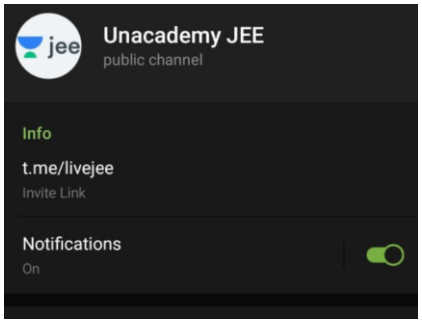
**B.Tech, M.Tech - IIT-Roorkee**

- **10+** years Teaching experience
- Taught **1 Million+** Students
- **100+** Aspiring Teachers Mentored

**sameer_iitr**

#JEE Live Daily

# **Telegram** Channel



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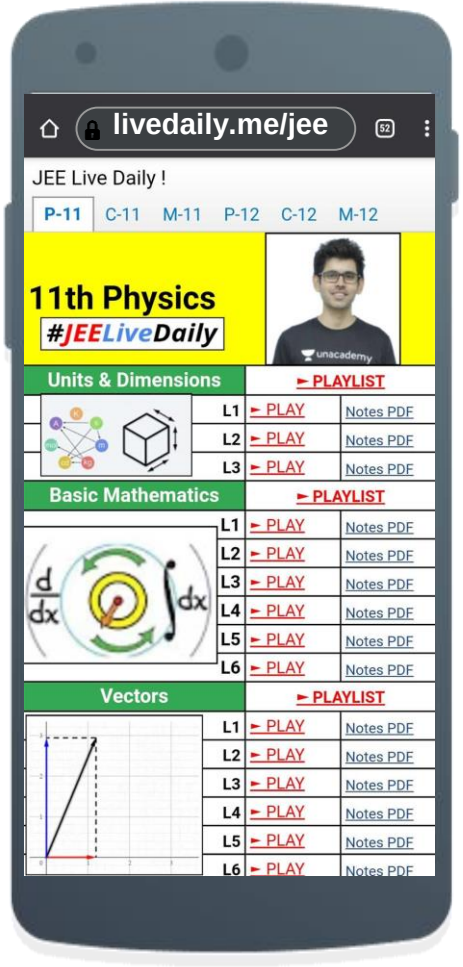

# Unacademy Subscription

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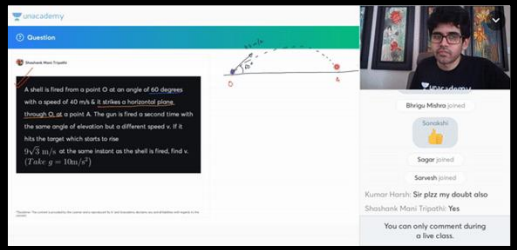
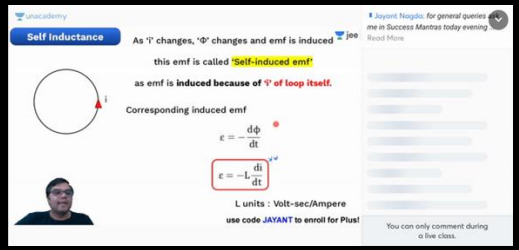
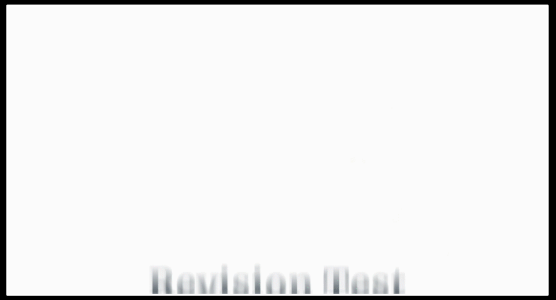
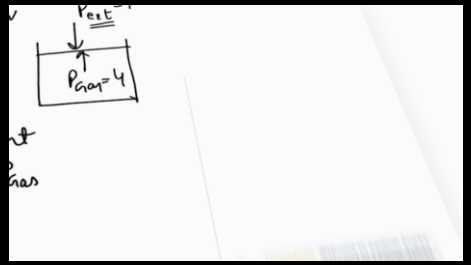
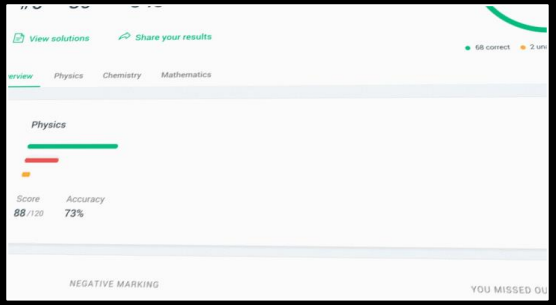



## + LIVE Class Environment

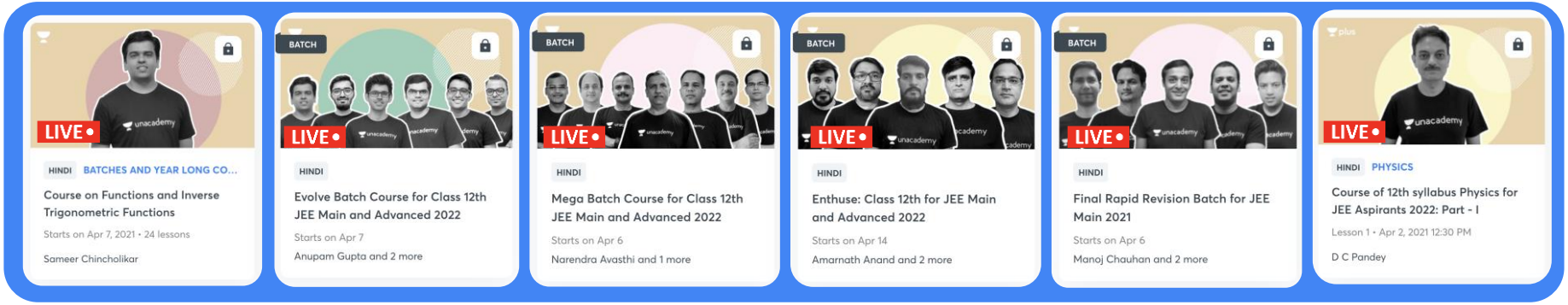
- **LIVE Polls** & **Leaderboard**
- **LIVE Doubt** Solving
- **LIVE** Interaction

## + Performance Analysis

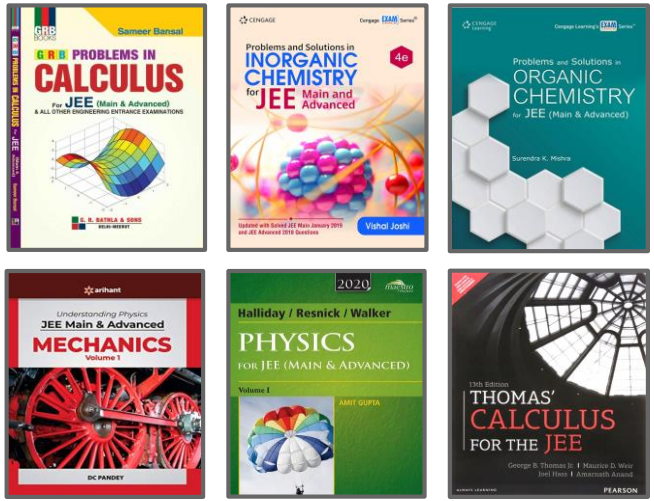
- **Weekly Test Series**
- **DPPs** & **Quizzes**

# India's **BEST** Educators

# Unacademy Subscription




If you want to be the **BEST**
"Learn" from the **BEST**



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# Top Results

**Bratin Mondal**

**100 %ile**

Amaiya Singhal
99.97

Adnan
99.95

Ashwin Prasanth
99.94

Tanmay Jain
99.86

Kunal Lalwani
99.81

Utsav Dhanuka
99.75

Aravindan K Sundaram
99.69

Manas Pandey
99.69

Mihir Agarwal
99.63

Akshat Tiwari
99.60

Sarthak Kalankar
99.59

Vaishnovi Arun
99.58

Devashish Tripathi
99.52

Maroof
99.50

Tarun Gupta
99.50

Siddharth Kaushik
99.48

Mihir Kothari
99.39

Sahil
99.38

Vaibhav Dhanuka
99.34

Pratham Kadam
99.29

Shivam Gupta
99.46

Shrish
99.28

Yash Bhaskar
99.10

Subhash Patel
99.02

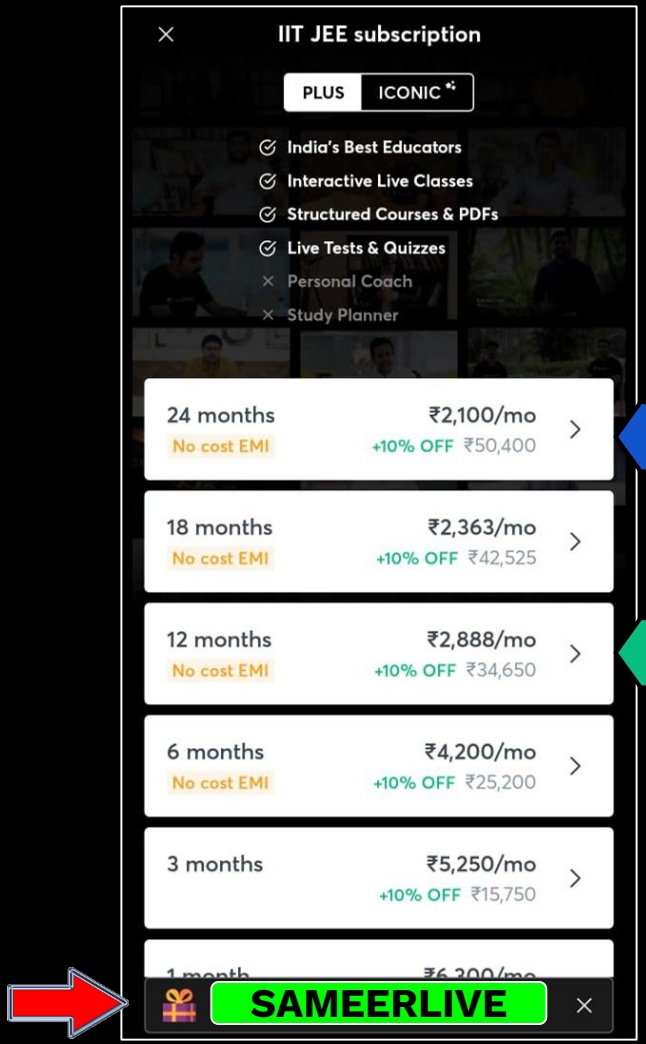
Ayush Kale
98.85

Ayush Gupta
98.67

Megh Gupta
98.59

Naman Goyal
98.48

MIHIR PRAJAPATI
98.16

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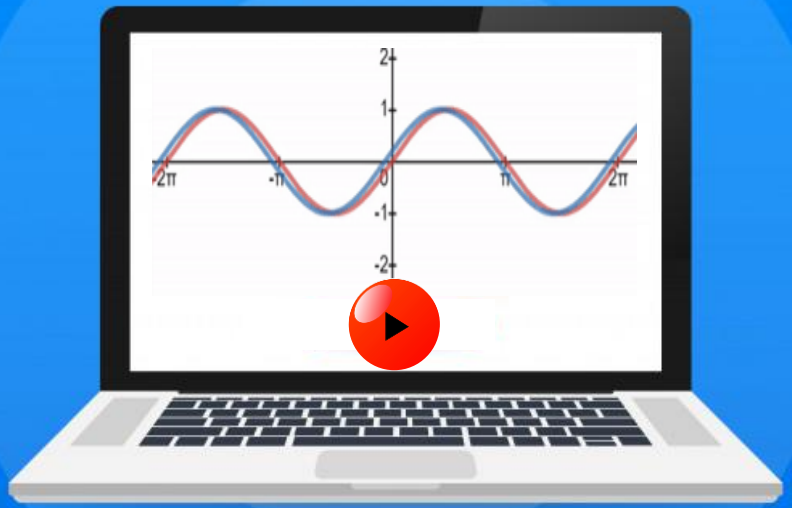
11th / 9, 10

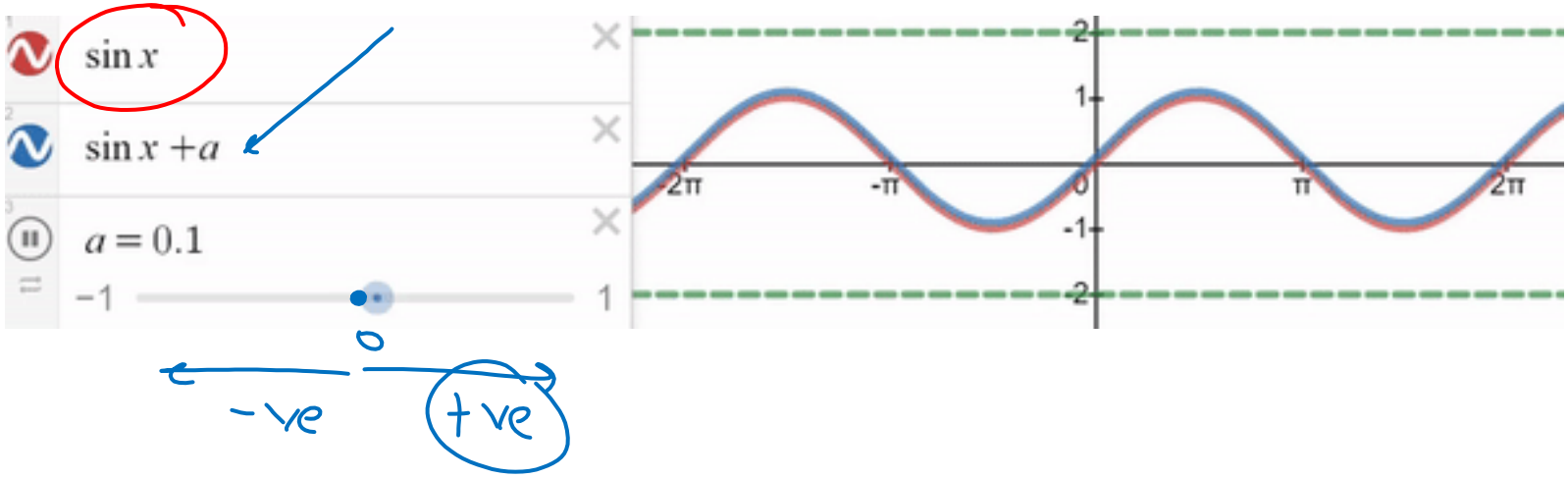
12th / Drop

# LET'S BEGIN!!

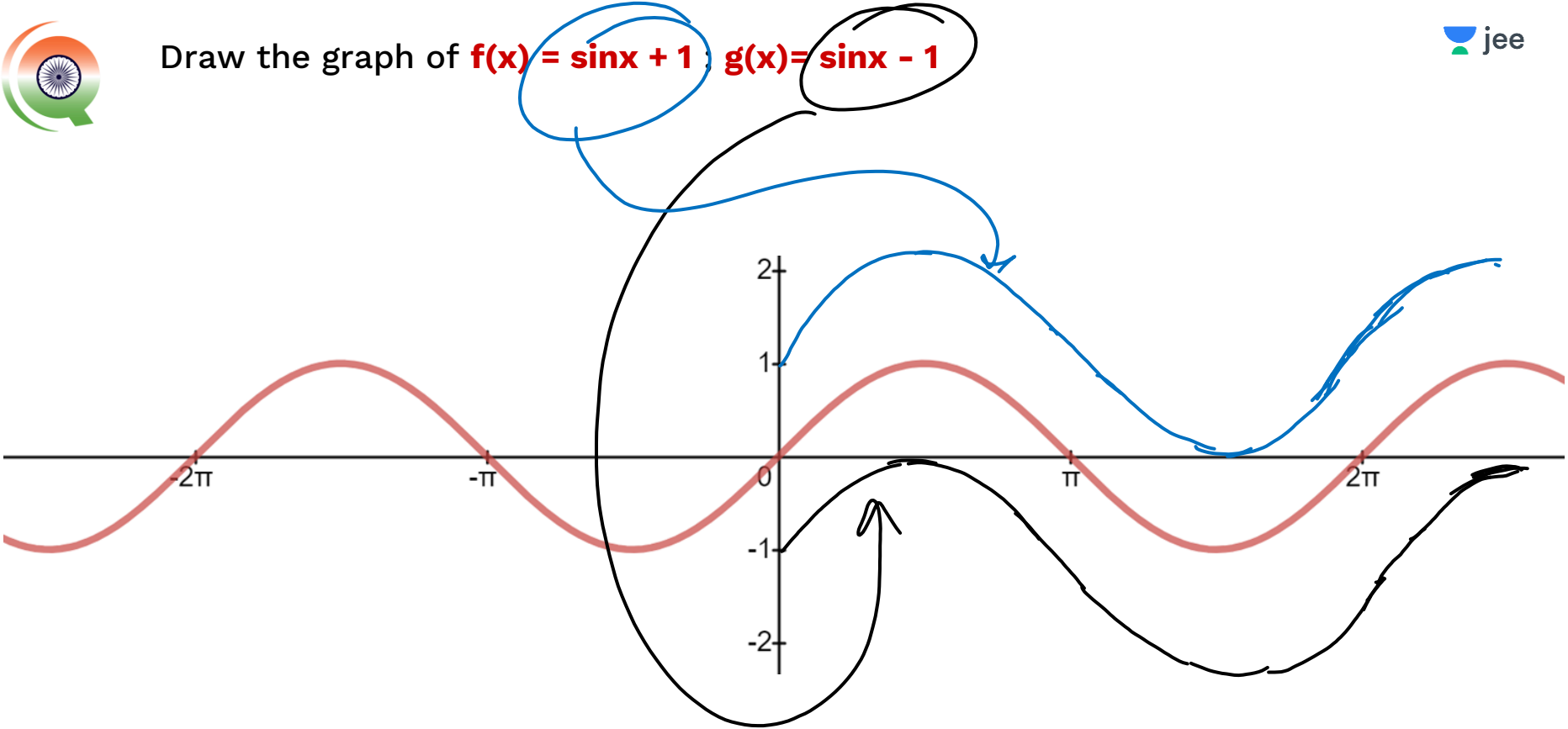
# Graphical Transformations



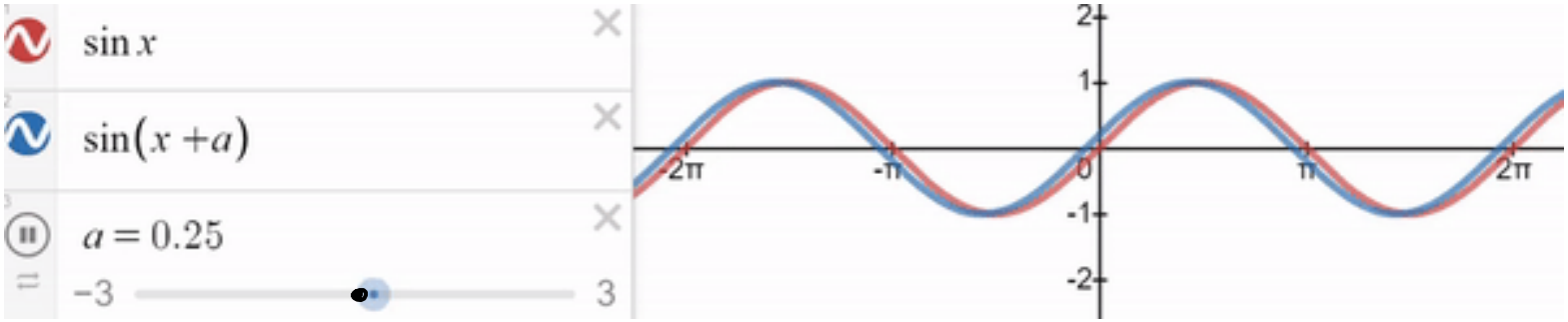
## 1. $y = f(x) \pm a$ Shift up or down by a units



Draw the graph of **f(x) = sinx + 1** ; **g(x)= sinx - 1**



2. $y = f(x \pm a)$ Shift left or right by a units



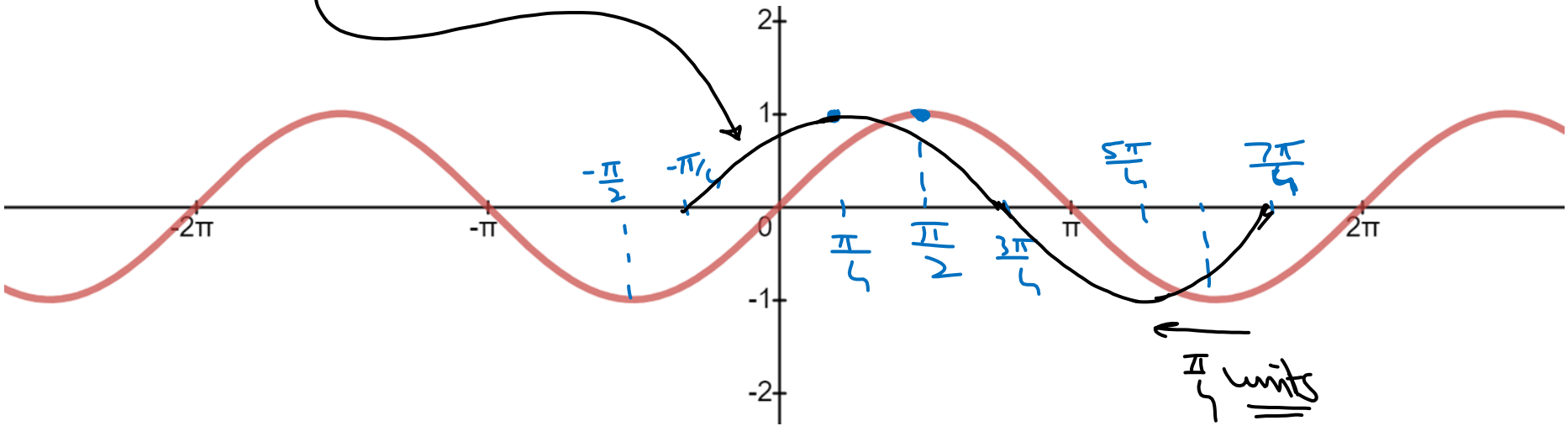

0

+a : left

−a : right

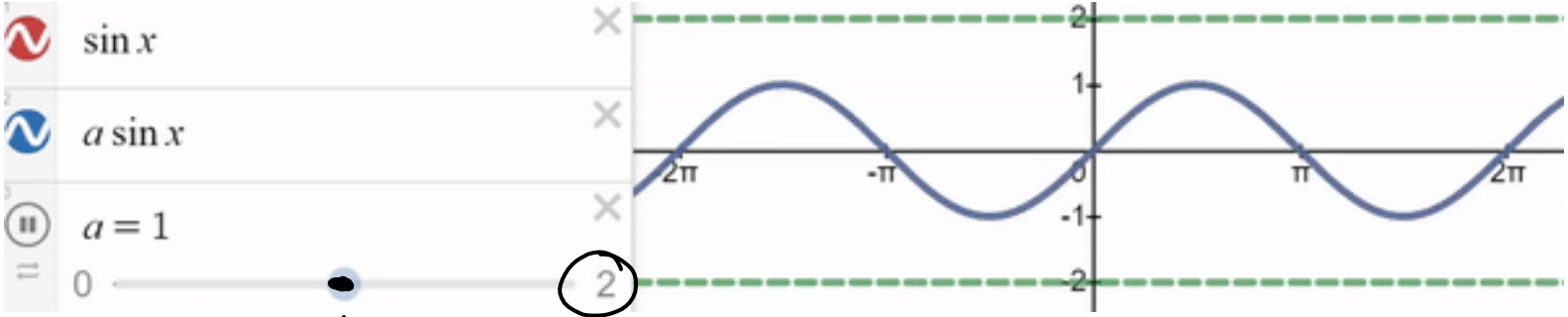
Draw the graph of

f(x) = $\sin\left(x + \frac{\pi}{4}\right)$ ; g(x) = $\sin\left(x - \frac{\pi}{4}\right)$



# 3. y = a.f(x)

Stretch or compress about y-axis

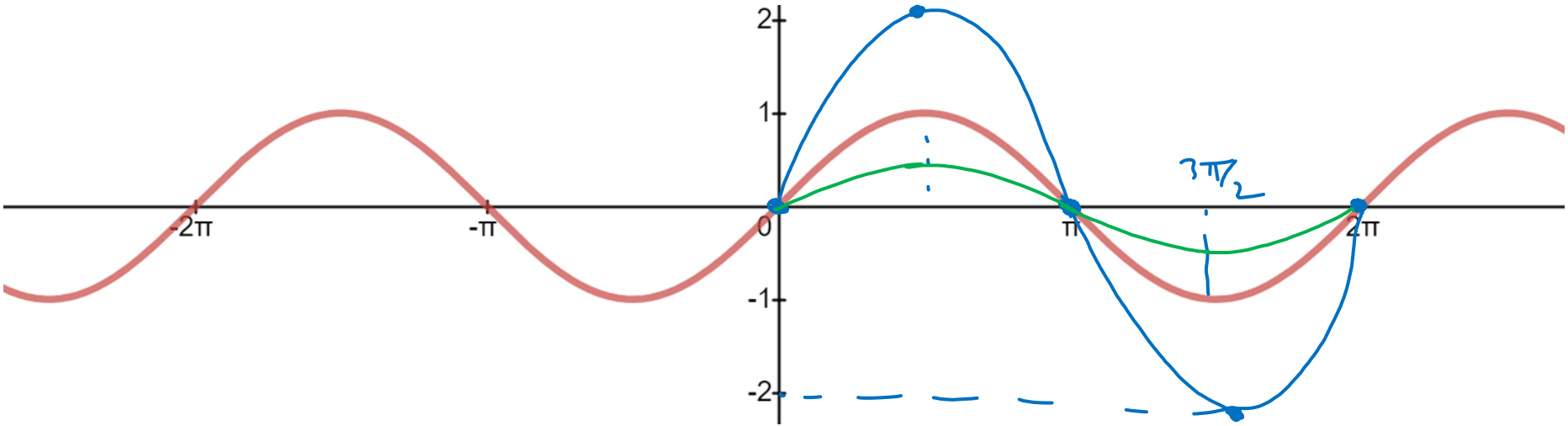



1

Compress ← → Stretch

$y = 2\sin x$

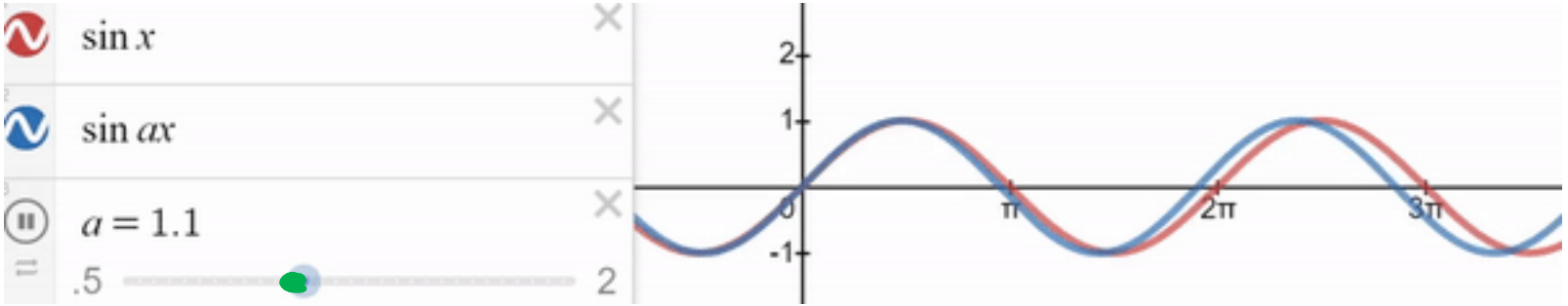
Draw the graph of **f(x) = 2sinx** ; **g(x) = (1/2 ) sinx**



4.

# y = f(ax)

Stretch or compress about x-axis



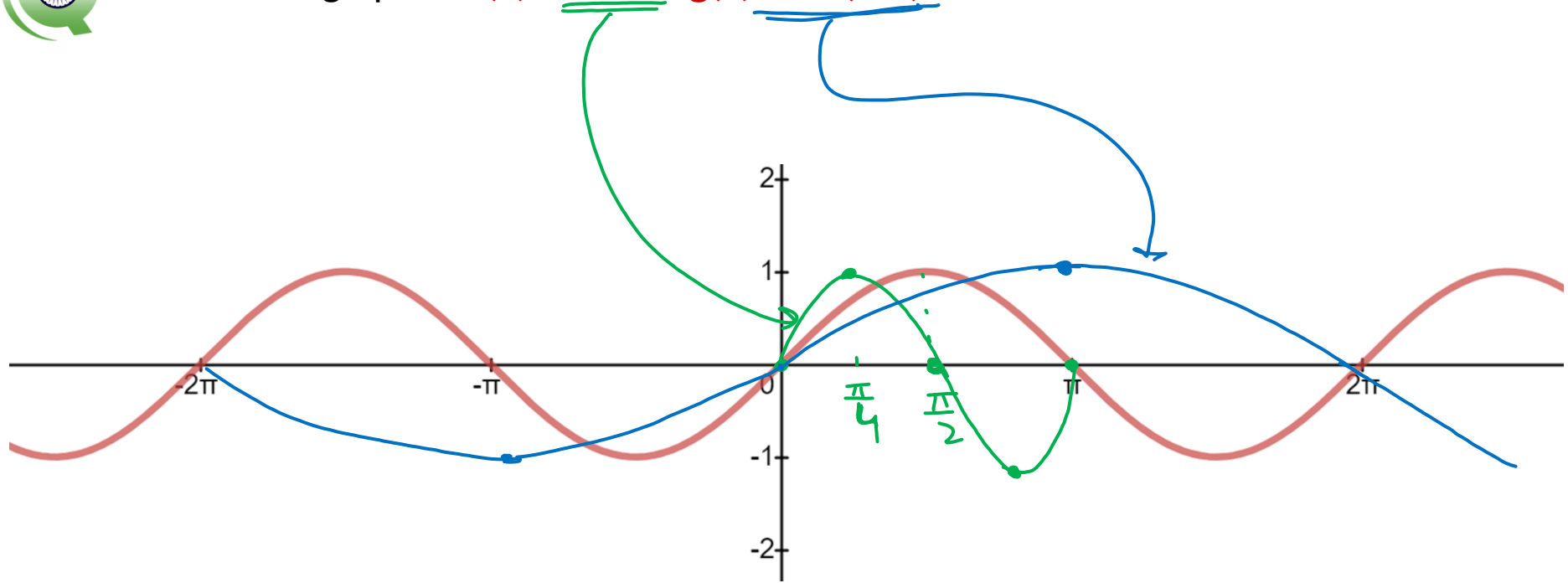

1

1/2

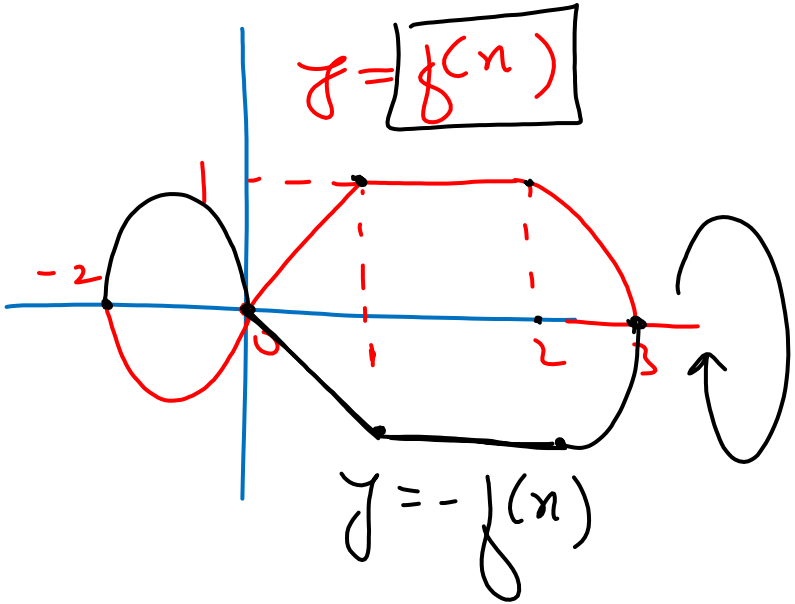
y = Sin x/2

y = Sin 2x

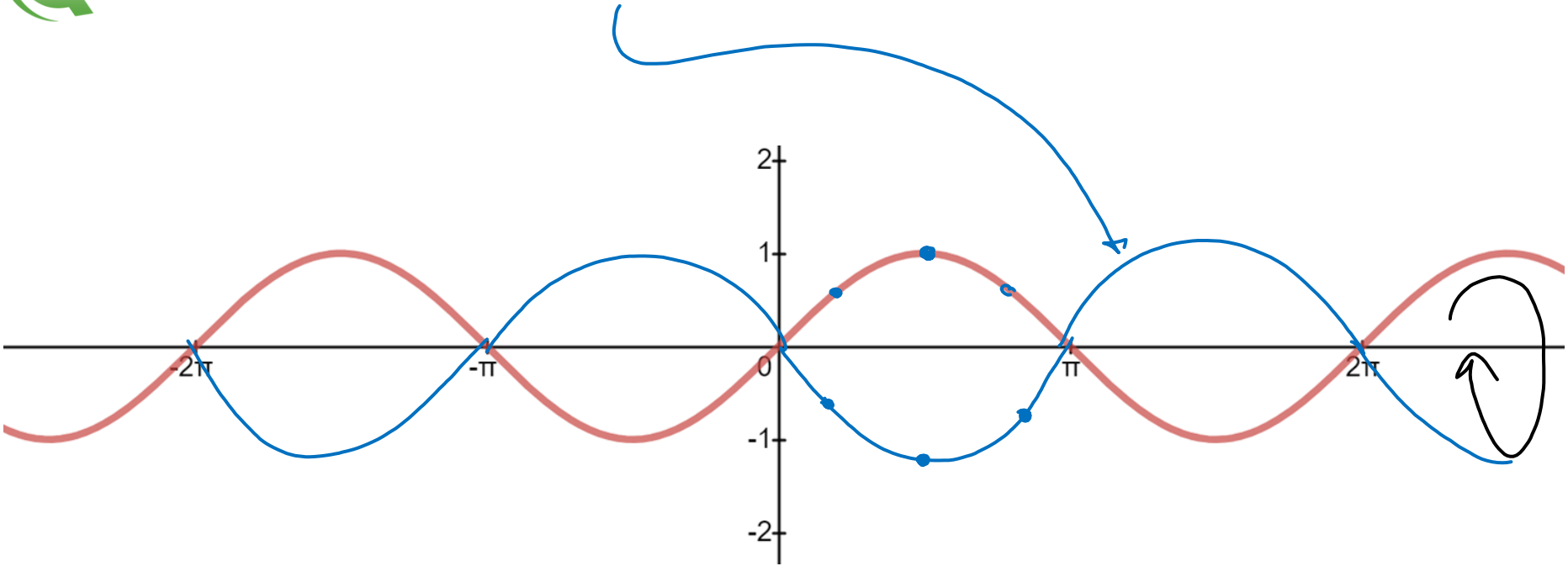
Draw the graph of **f(x) = sin2x** ; **g(x) = sin(x/2)**



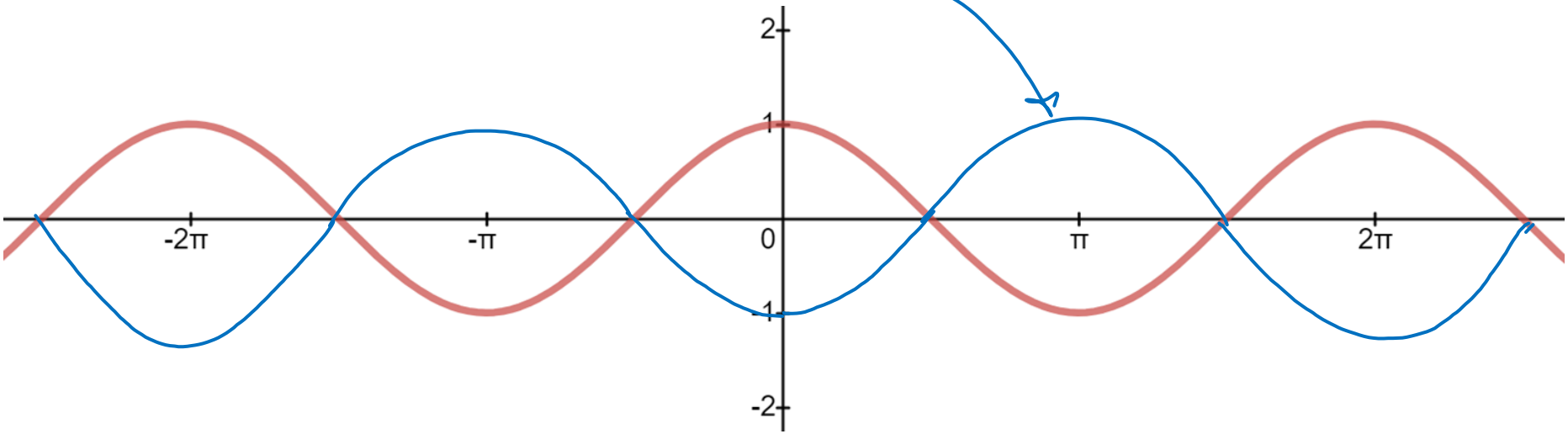
5. $y = -f(x)$ Flip about x-axis



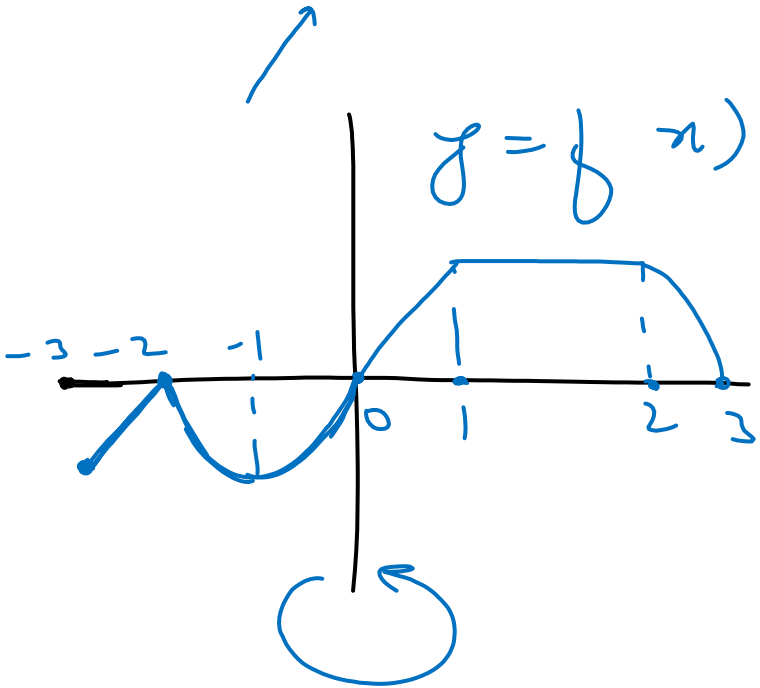
Draw the graph of: **f(x) = - sinx**

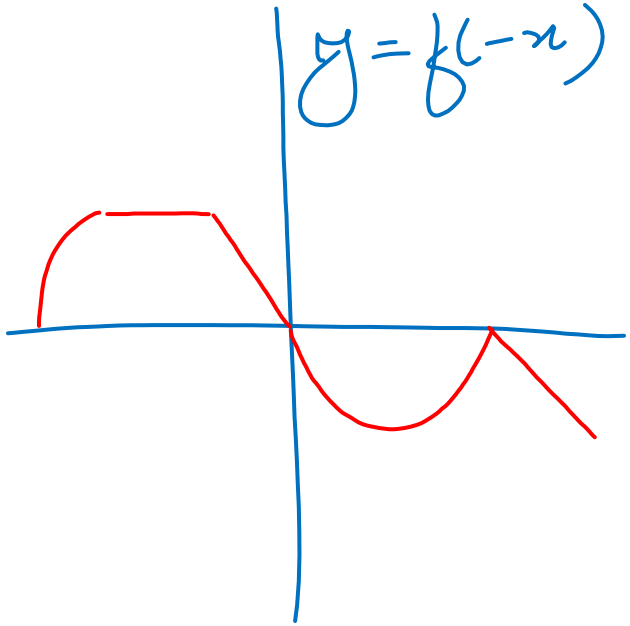


Draw the graph of: **f(x) = - cosx**

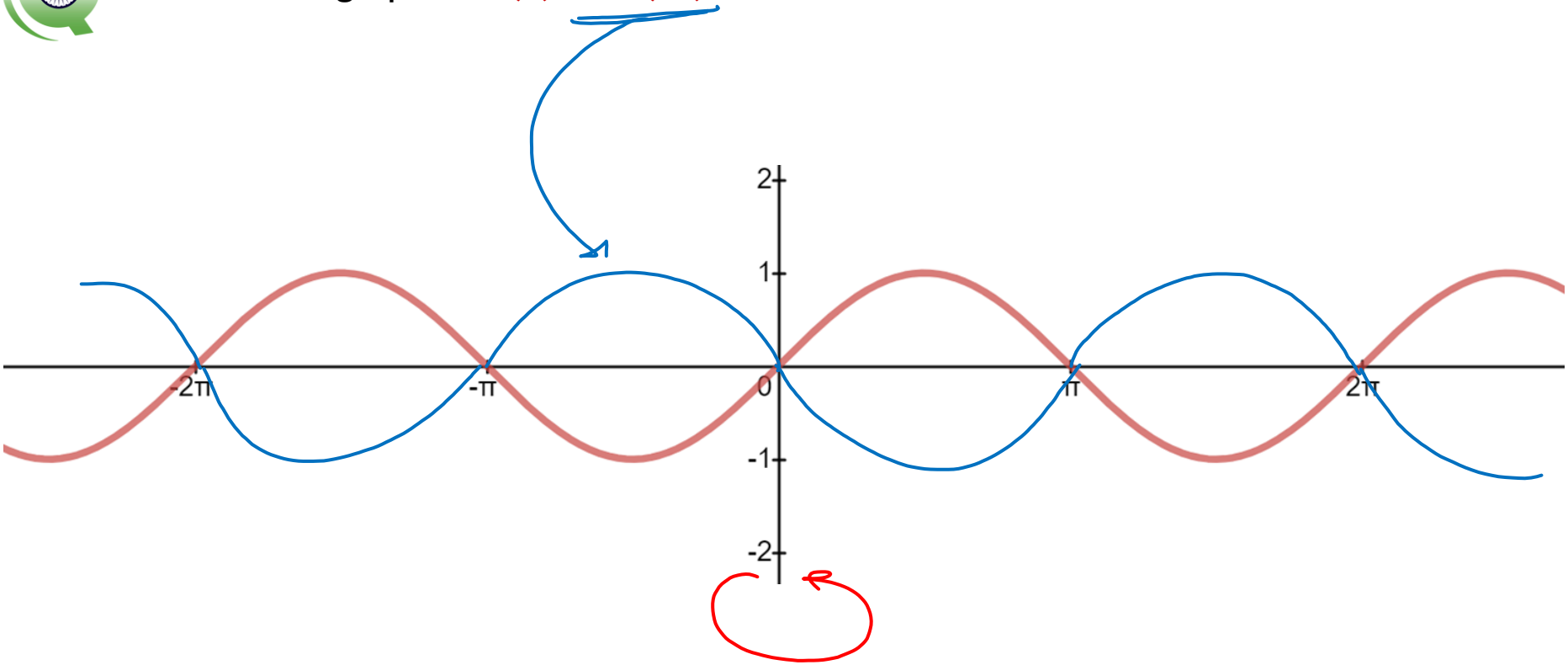


6. **y = f(-x)** Flip about y-axis



Draw the graph of: **f(x) = sin(-x)**



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## 7. y = |f(x)|

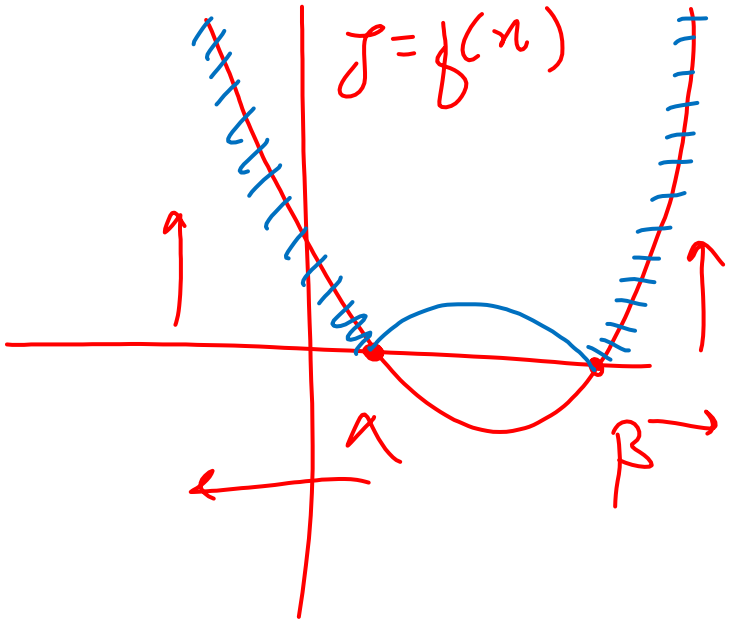
Reflect only the portion below x-axis about x-axis

f(x) +ve

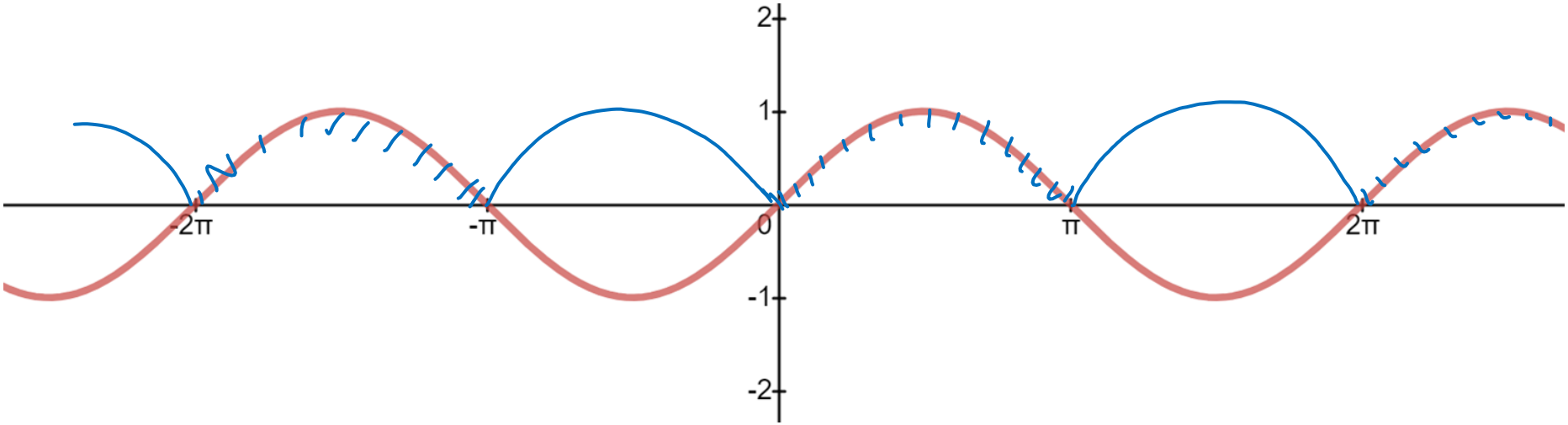
$y = f(x)$

f(x) -ve

$y = -f(x)$

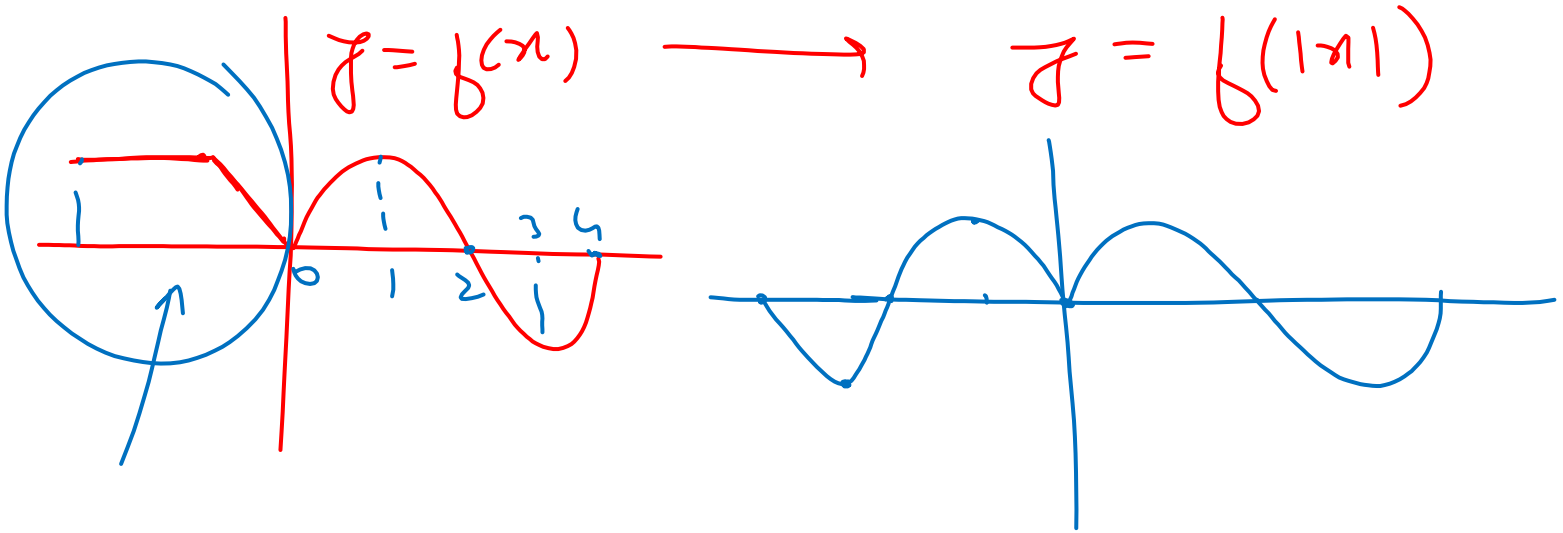


Draw the graph of **f(x) = |sinx|**

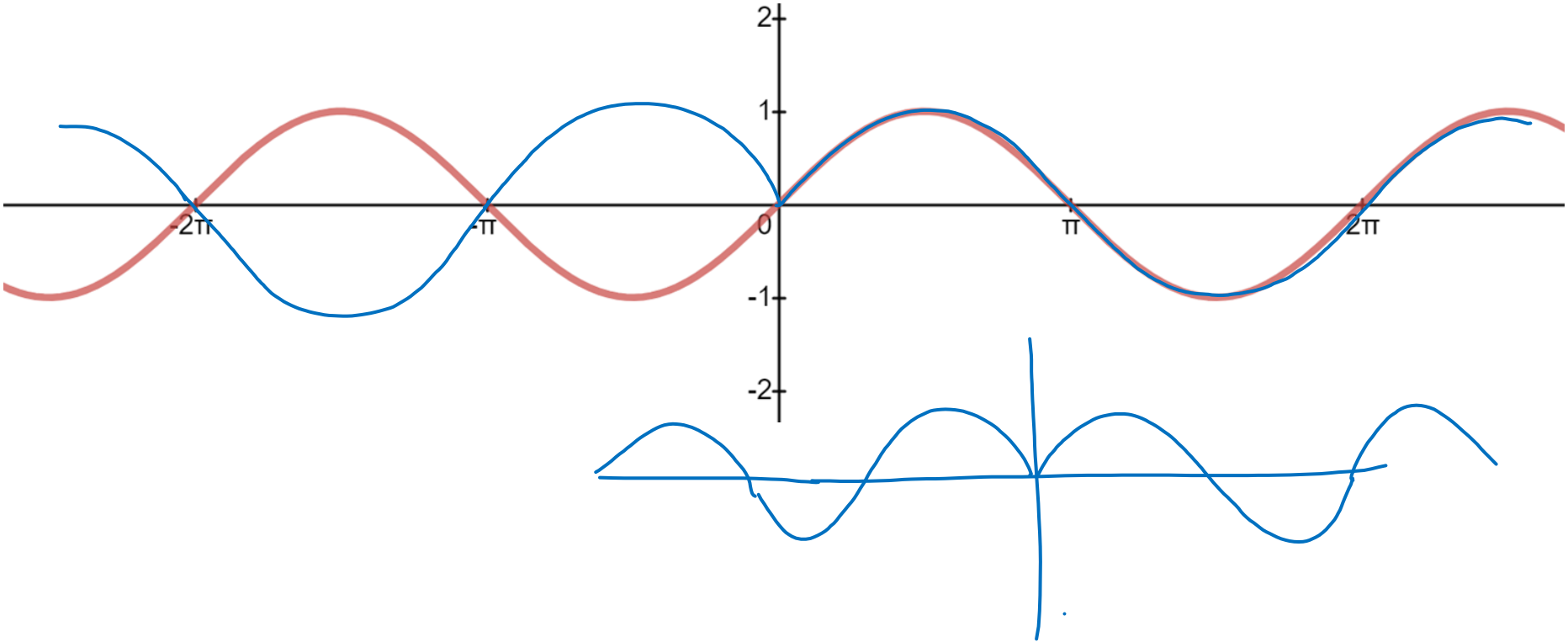


## 8. y = f(|x|)

Keep only the portion right of y-axis and then reflect it, about y-axis, keeping original portion intact.

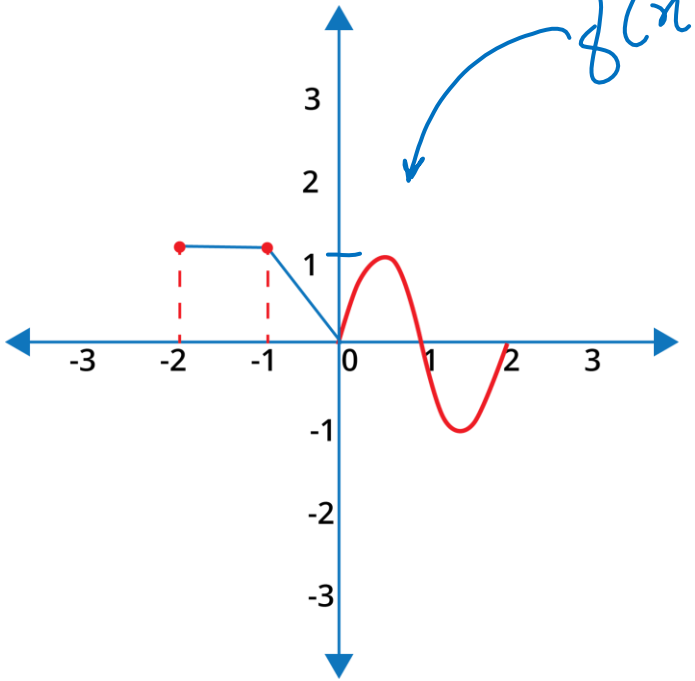


Draw the graph of **g(x) = sin|x|**

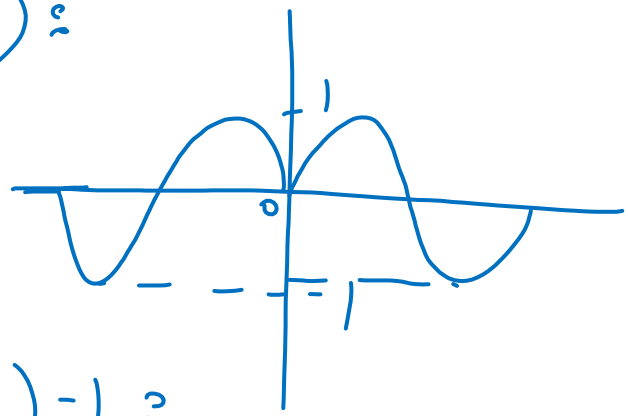


If the graph of f(x) is as shown:

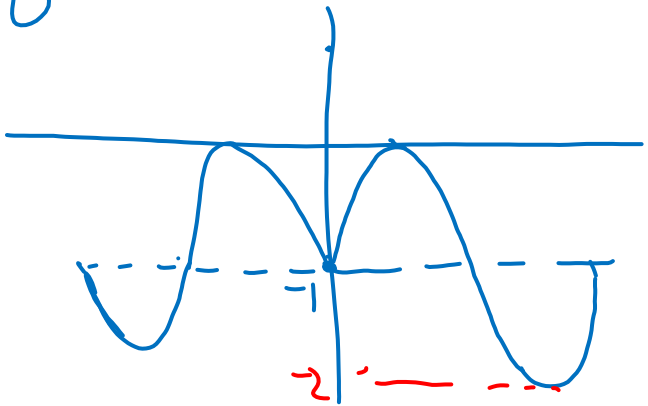
**Draw the graph of $y = |f(|x|) - 1|$**



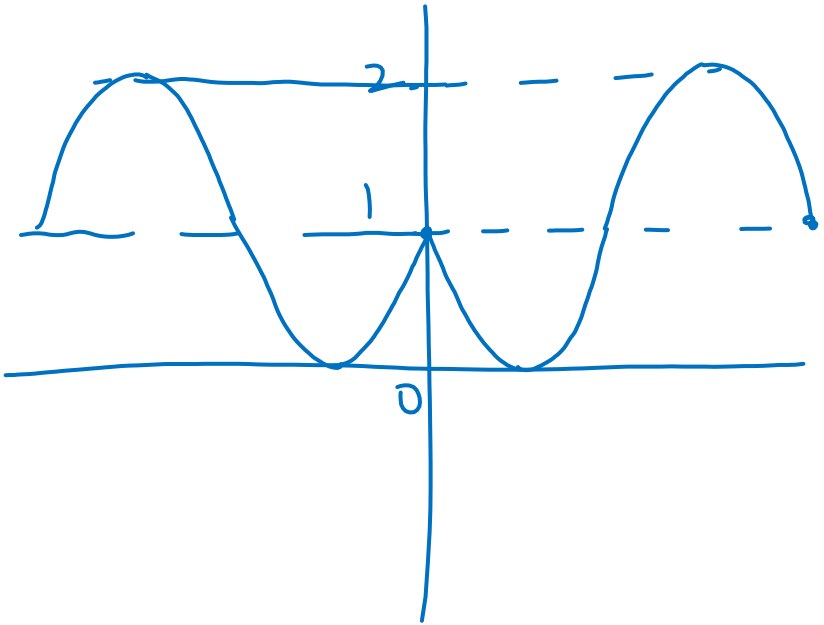

$f(|x|)$ :




$f(|x|) - 1$ :

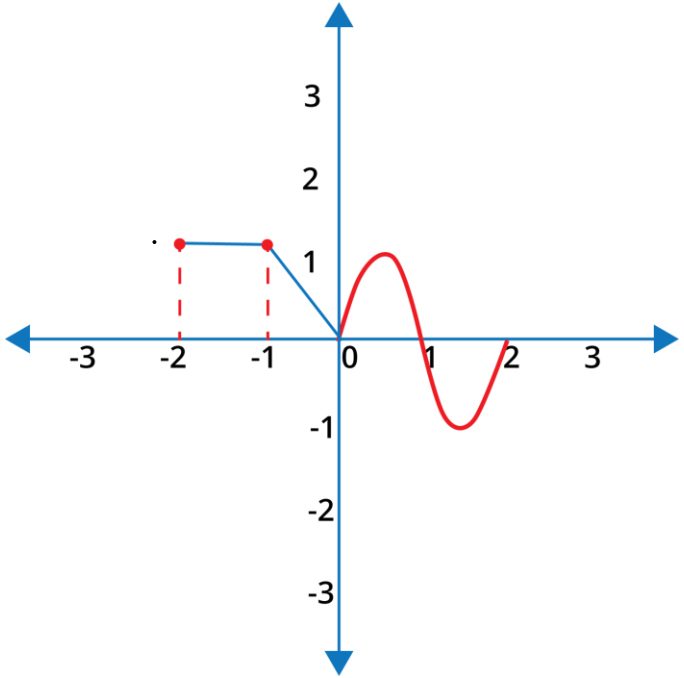


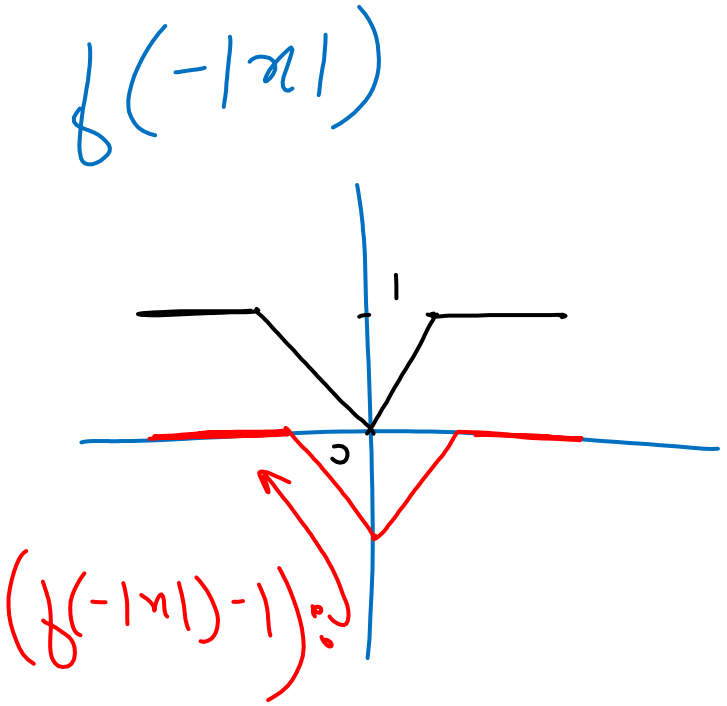
$|f(|x|)-1|$ :

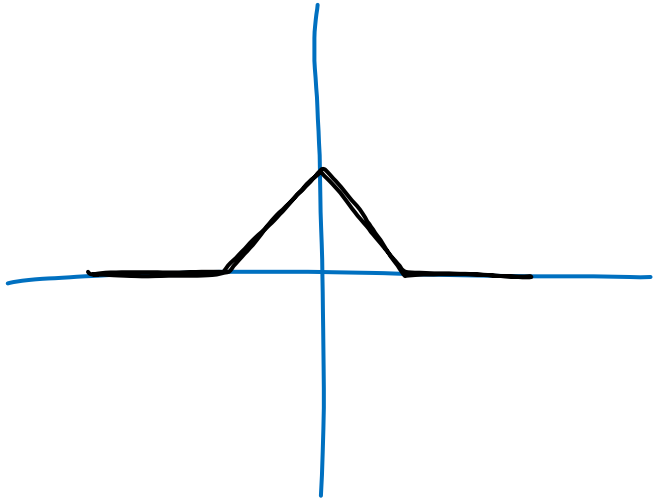


If the graph of f(x) is as shown:

**Draw the graph of $y = |f(-|x|) - 1|$**





Find the number of solutions of **2sinx = [x]** (where [.] is greatest integer function).

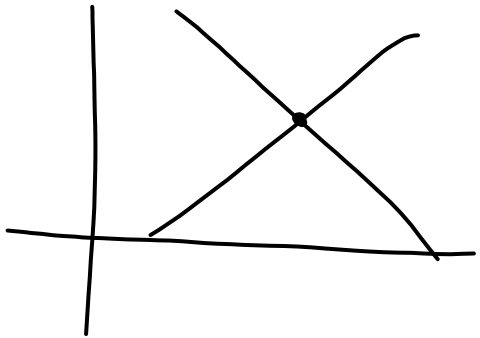
$y = LHS \Rightarrow y = 2\sin x$

$y = RHS \Rightarrow y = [x]$

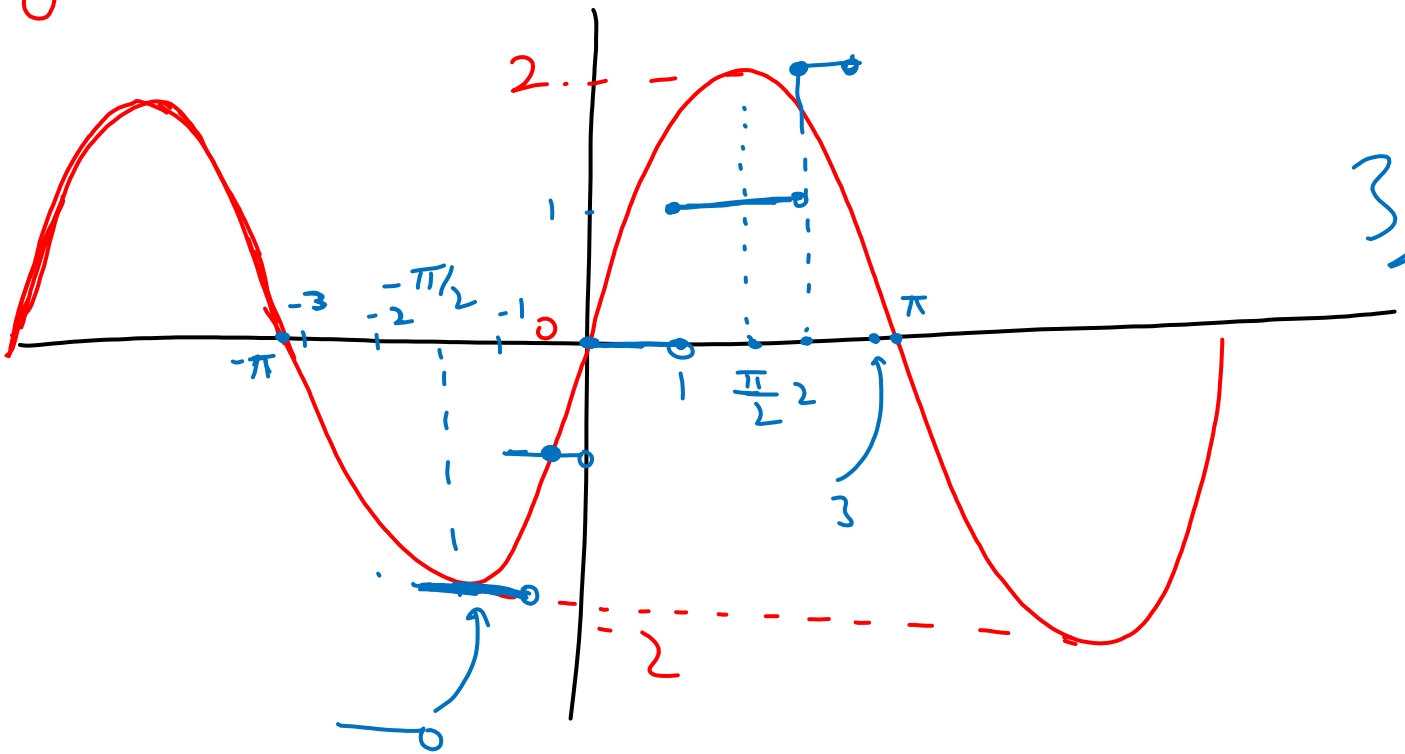
$m_1 x + c_1 = m_2 x + c_2$

$L_1 : y = m_1 x + c_1$

$L_2 : y = m_2 x + c_2$



$y = 2\sin x$ $\longrightarrow$ $y = [x]$




3 sol$^n$s

Find the number of solutions of $x - 7.|\sin x| = 0$

$$x = 7|\sin x|$$

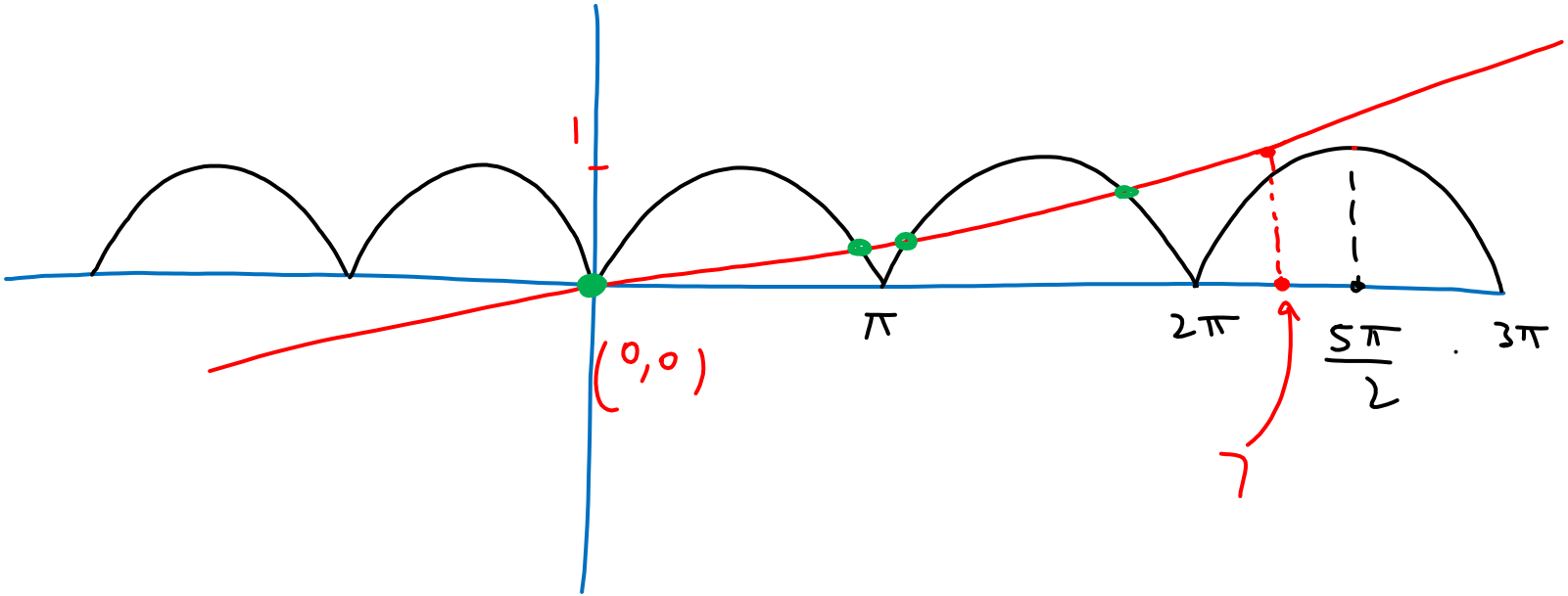
$$\frac{x}{7} = |\sin x|$$

$$y = \frac{x}{7}$$

$$y = |\sin x|$$

$y = |\sin x|$

$(0,0) \quad y = \frac{x}{7} \quad (7,1)$

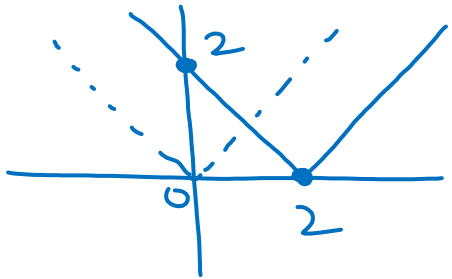


Find the number of solutions of

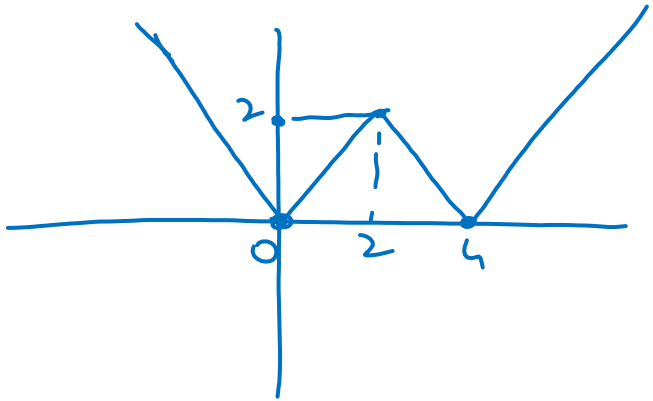
$|||x-2|-2|-2|=1$

$y = |||x-2|-2|-2|$

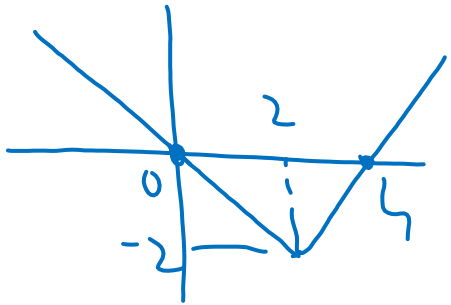
$|x-2|$ :



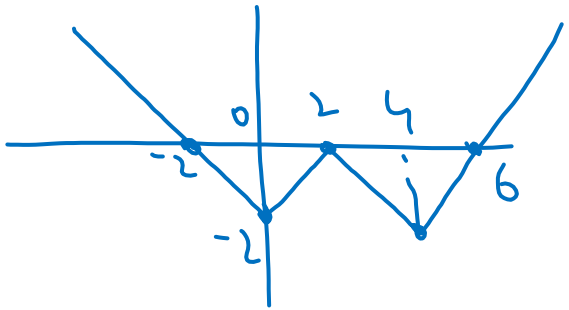

$||x-2|-2|$ :



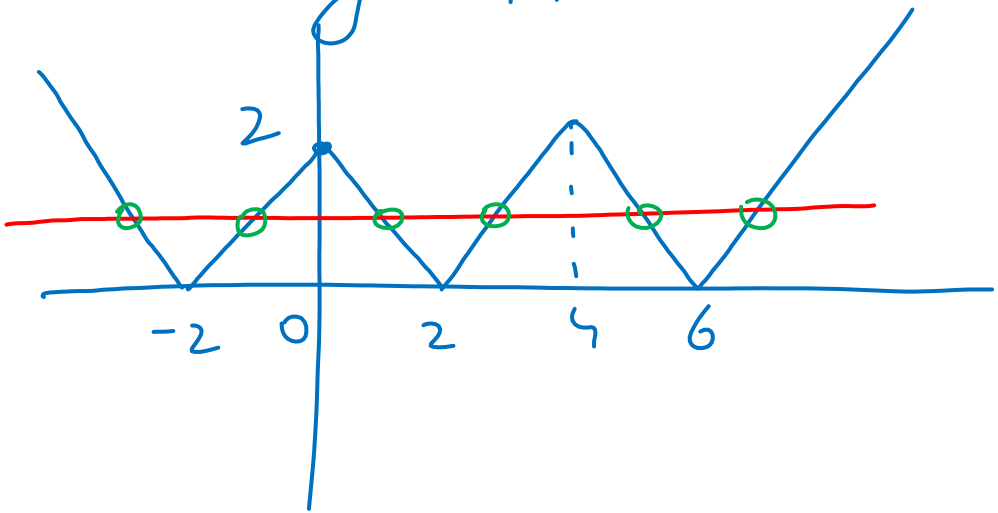

$|x-2|-2$ :




$||x-2|-2|-2$ :



$y = ||x-2|-2|-2|$



# #JEELiveDaily Schedule

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## 11th

Namo Sir | Physics

6:00 - 7:30 PM

Ashwani Sir | Chemistry

7:30 - 9:00 PM

Sameer Sir | Maths

9:00 - 10:30 PM

## 12th

Jayant Sir | Physics

1:30 - 3:00 PM

Anupam Sir | Chemistry

3:00 - 4:30 PM

Nishant Sir | Maths

4:30 - 6:00 PM

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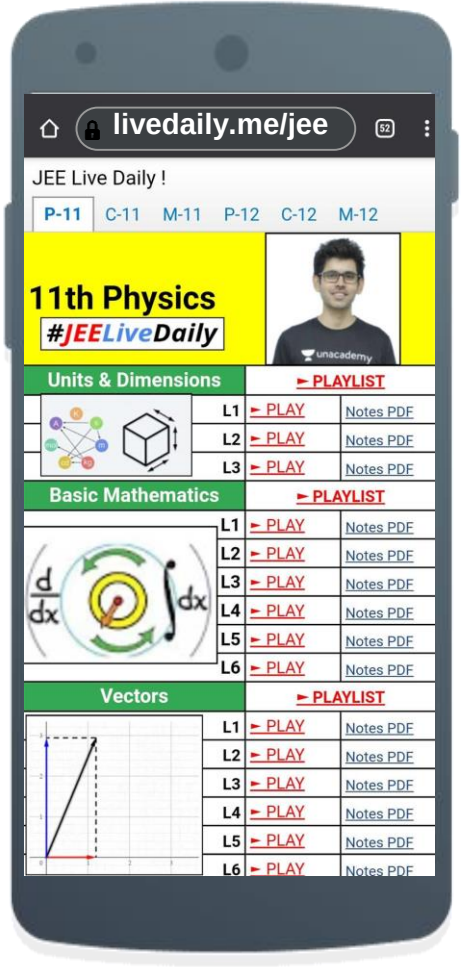

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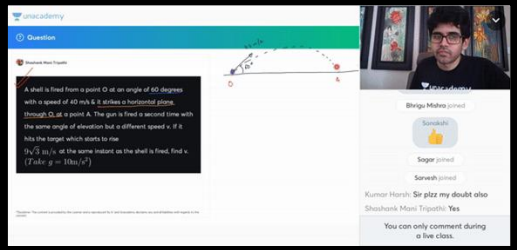


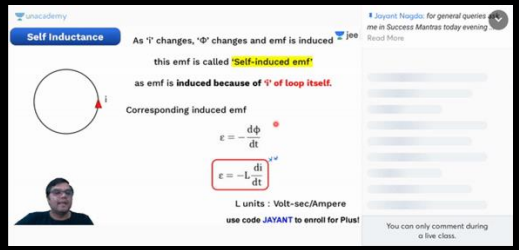


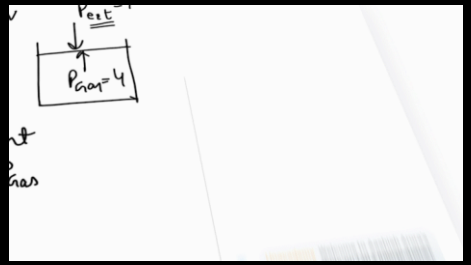


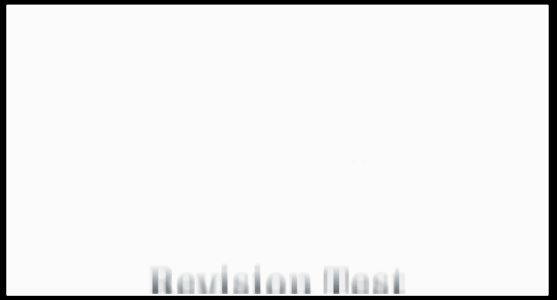


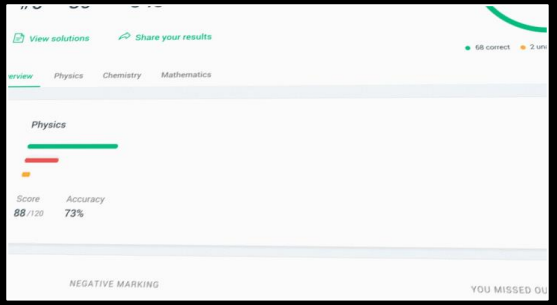


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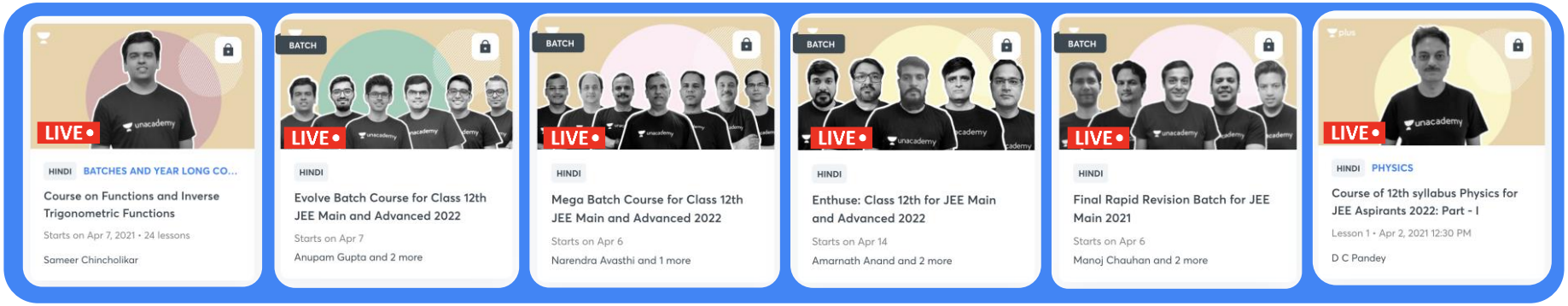


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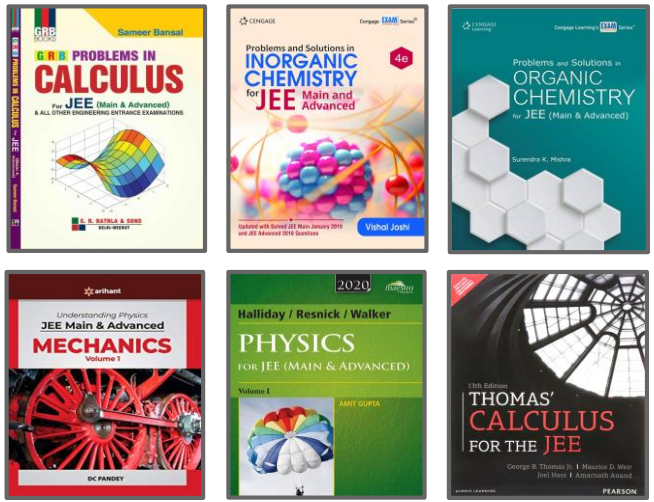

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# Top Results

**Bratin Mondal**

**100 %ile**

Amaiya Singhal
99.97

Adnan
99.95

Ashwin Prasanth
99.94

Tanmay Jain
99.86

Kunal Lalwani
99.81

Utsav Dhanuka
99.75

Aravindan K Sundaram
99.69

Manas Pandey
99.69

Mihir Agarwal
99.63

Akshat Tiwari
99.60

Sarthak Kalankar
99.59

Vaishnovi Arun
99.58

Devashish Tripathi
99.52

Maroof
99.50

Tarun Gupta
99.50

Siddharth Kaushik
99.48

Mihir Kothari
99.39

Sahil
99.38

Vaibhav Dhanuka
99.34

Pratham Kadam
99.29

Shivam Gupta
99.46

Shrish
99.28

Yash Bhaskar
99.10

Subhash Patel
99.02

Ayush Kale
98.85

Ayush Gupta
98.67

Megh Gupta
98.59

Naman Goyal
98.48

MIHIR PRAJAPATI
98.16

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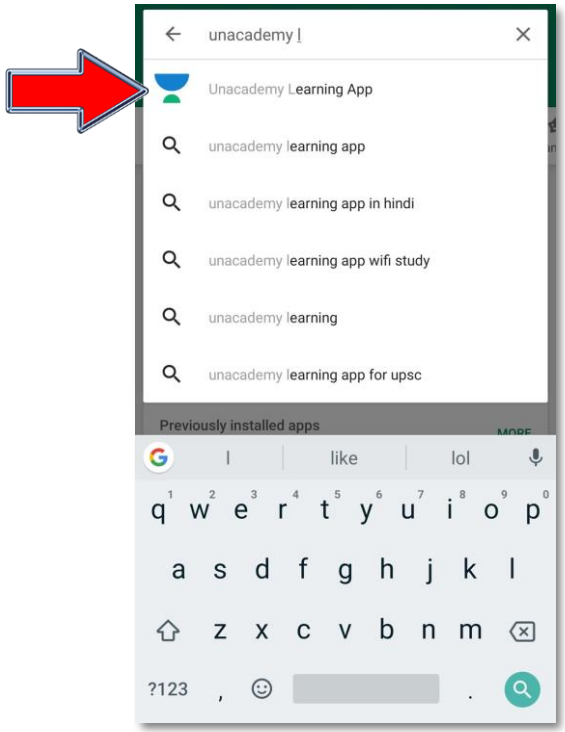
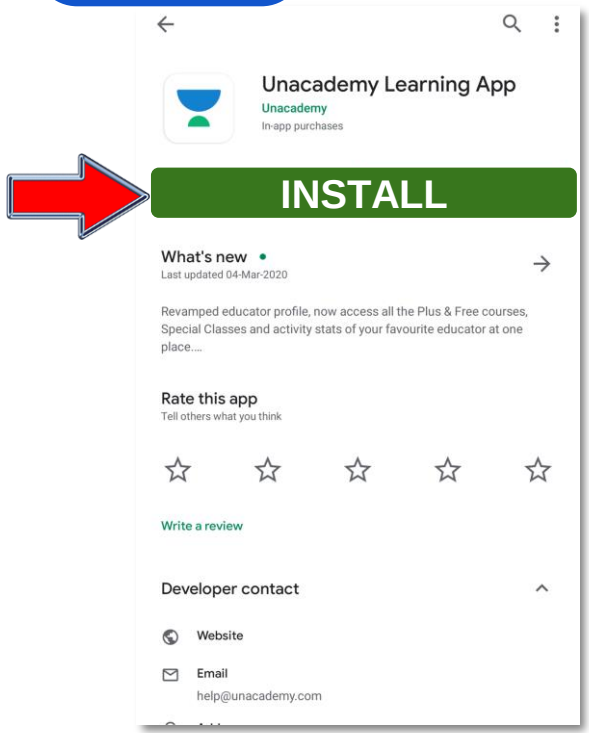
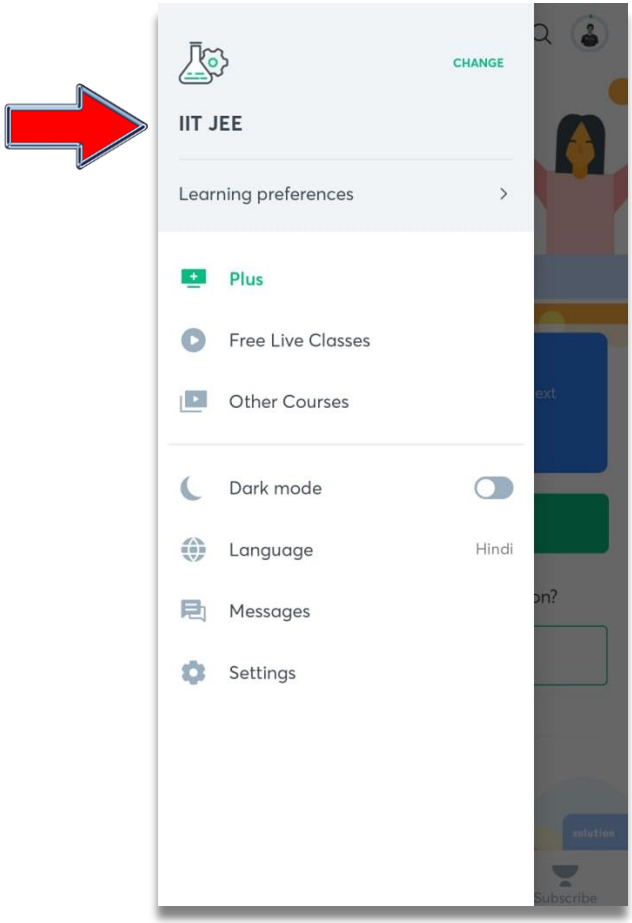
## Step 1




## Step 2

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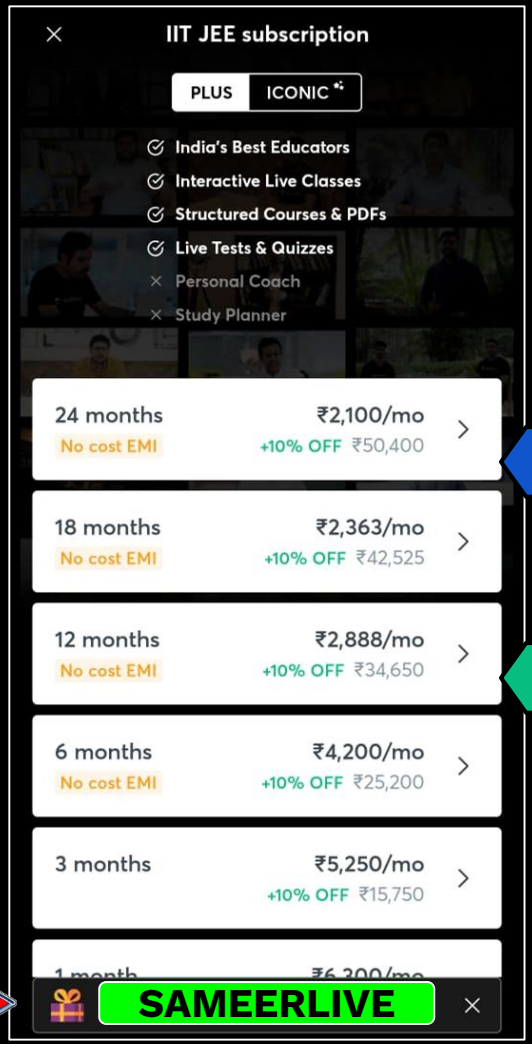


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**Micro Batch :** JEE Main & Advanced 2023 — Starts on 19th May 2021

**Legend 3.0 Batch :** JEE Main & Advanced 2022 — Starts on 19th May 2021

**Emerge Batch (Class 11th) :** JEE Main & Advanced 2023 — Starts on 20th May 2021

**Spark 3.0 Batch :** JEE Main & Advanced 2023 — Started on 26th May 2021

# Upcoming Tests in May

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- **Unacademy COMBAT** - 23rd May
- **T 20 Test Series - Target JEE 2022** - 18, 19, 20, 21, 22nd May
- **T 20 Test Series - Target JEE 2023** - 18, 19, 20, 21, 22nd May
- **JEE Live Daily Test Series - 2022** - 19th May
- **JEE Live Daily Test Series - 2023** - 19th May
- **Chem-O-Legends by Kashif Alam** - 24th May

# Thank You

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