



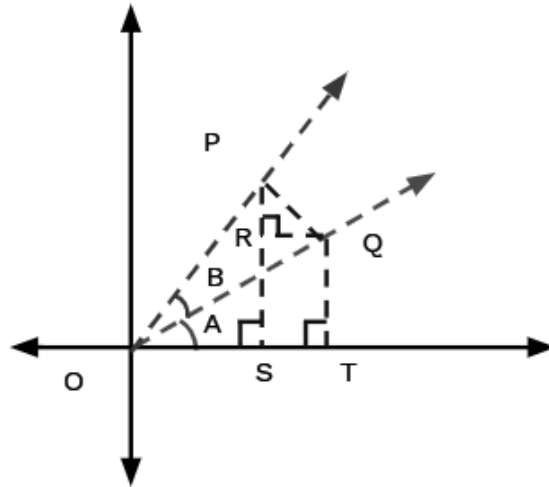
jee

LIVE daily

3.0

## Multiple & Submultiple Angle Formulas

# Trigonometry



**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



Search



**Sameer Chincholikar** ✓

#1 Educator in Mathematics · IIT JEE

#Follow for JEE Advanced and JEE Main Courses #10+ years of experience online

#Mentor to Aspiring JEE teachers # IIT Roorkee

Follow

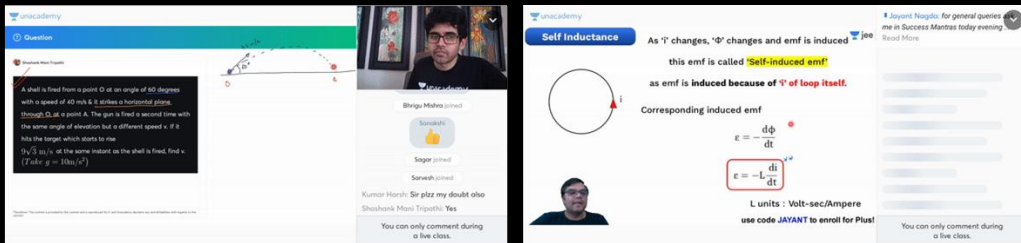
49M Watch mins

2M Watch mins (last 30 days)

79K Followers

10K Dedications





**Question:** A shell is fired from a point O at an angle of 60 degrees with a speed of 40 m/s. It strikes a horizontal plane through O at a point A. The gun is fired a second time with the same angle of elevation but a different speed  $v$ . If it hits the target which starts to rise  $(\sqrt{3}/2) \text{ m/s}^2$  at the same instant as the shell is fired, find  $v$ . (Take  $g = 10 \text{ m/s}^2$ )

**Self Inductance:** As  $\vec{I}$  changes,  $\vec{\Phi}$  changes and emf is induced. This emf is called **Self-induced emf** as emf is induced because of  $\vec{I}$  of loop itself.

Corresponding induced emf

$$\mathcal{E} = -\frac{d\Phi}{dt}$$

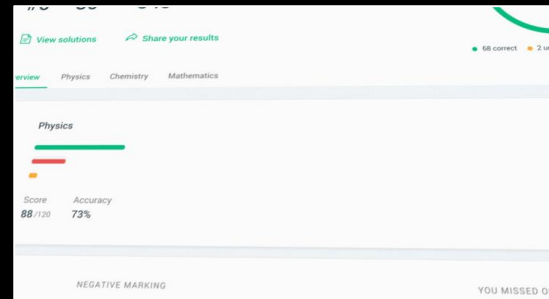
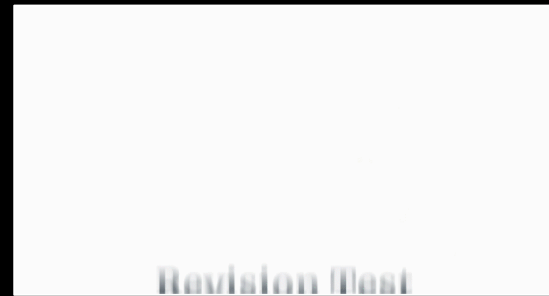
$$\mathcal{E} = -L \frac{dI}{dt}$$

Units: Volt-sec/Ampere  
use code JAYANT to enroll for Plus!



## + LIVE Class Environment

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

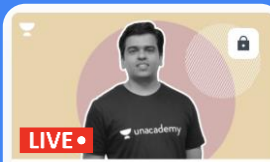


## + Performance Analysis

- + Weekly Test Series
- + DPPs & Quizzes

# + India's BEST Educators

# Unacademy Subscription




**LIVE**

HINDI BATCHES AND YEAR LONG CO...

Course on Functions and Inverse Trigonometric Functions

Starts on Apr 7, 2021 • 24 lessons

Sameer Chincholikar




**LIVE**

HINDI

Evolve Batch Course for Class 12th JEE Main and Advanced 2022

Starts on Apr 7

Anupam Gupta and 2 more



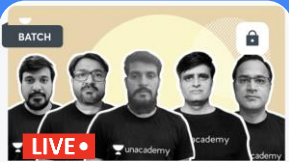
**LIVE**

HINDI

Mega Batch Course for Class 12th JEE Main and Advanced 2022

Starts on Apr 6

Narendra Avasthi and 1 more




**LIVE**

HINDI

Enthuse: Class 12th for JEE Main and Advanced 2022

Starts on Apr 14

Amarnath Anand and 2 more



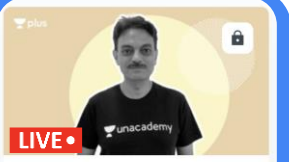
**LIVE**

HINDI

Final Rapid Revision Batch for JEE Main 2021

Starts on Apr 6

Manoj Chauhan and 2 more



**LIVE**

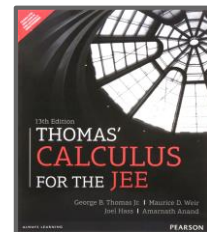
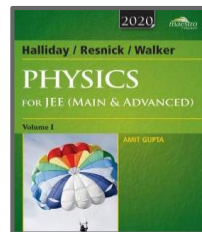
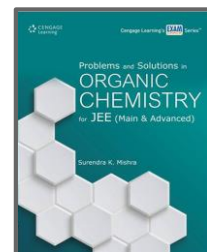
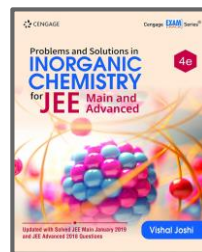
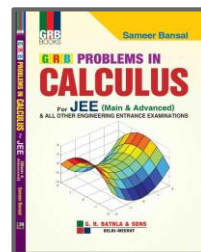
HINDI PHYSICS

Course of 12th syllabus Physics for JEE Aspirants 2022: Part - I

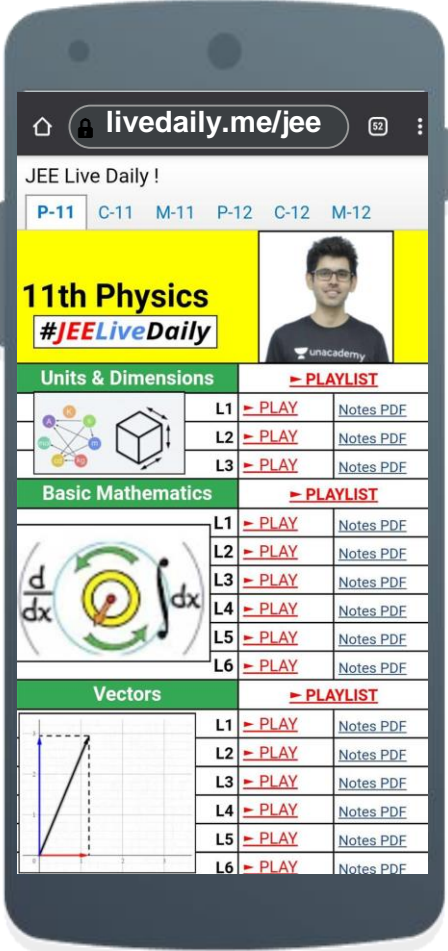
Lesson 1 • Apr 2, 2021 12:30 PM

D C Pandey

If you want to be the **BEST**  
“Learn” from the **BEST**



livedaily.me/jee







jee

# 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



## IIT JEE subscription

PLUS

ICONIC \*\*

✓ India's Best Educators

✓ Interactive Live Classes

✓ Structured Courses & PDFs

✓ Live Tests & Quizzes

✗ Personal Coach

✗ Study Planner

24 months

₹2,100/mo



No cost EMI

+10% OFF ₹50,400

18 months

₹2,363/mo



No cost EMI

+10% OFF ₹42,525

12 months

₹2,888/mo



No cost EMI

+10% OFF ₹34,650

6 months

₹4,200/mo



No cost EMI

+10% OFF ₹25,200

3 months

₹5,250/mo



+10% OFF ₹15,750

1 month

₹6,200/mo



**SAMEERLIVE**



11<sup>th</sup> / 9, 10

12<sup>th</sup> / Drop







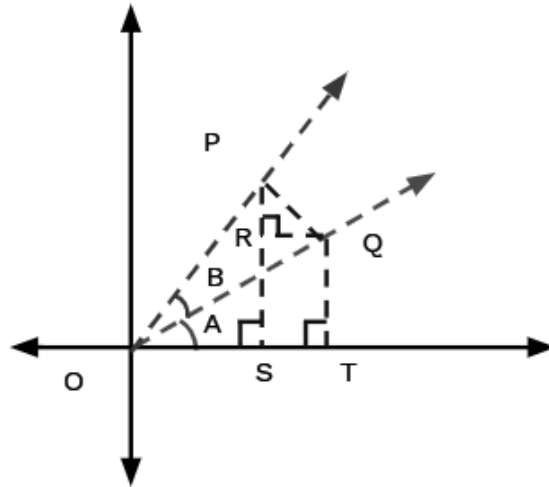
jee

LIVE daily

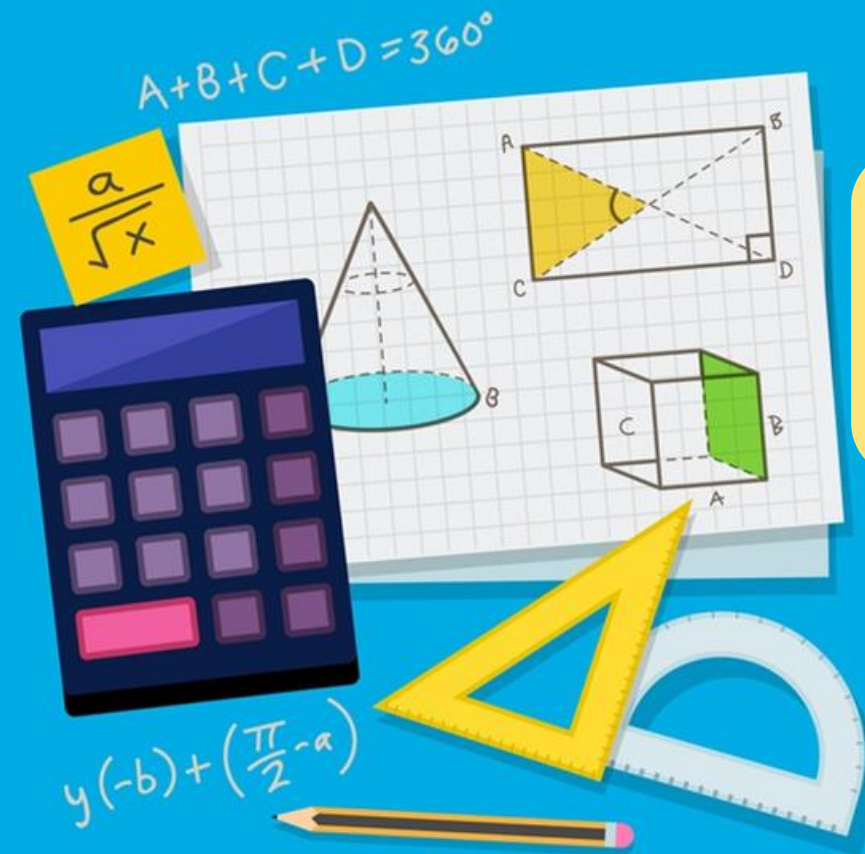
3.0

## Multiple & Submultiple Angle Formulas

# Trigonometry



# LET'S BEGIN!!



# Homework Question



If  $A + B = \frac{\pi}{3}$ , then find the value of

$$\cos^2 A + \cos^2 B - \cos A \cos B$$

A.  $\frac{1}{2}$

B.  $\frac{3}{2}$

☒ C.  $\frac{3}{4}$

D. 1

M-1?

Shortcut:

$$A = B = \frac{\pi}{6}$$

$$\cos^2 \frac{\pi}{6} + \cancel{\cos^2 \frac{\pi}{6}} - \cancel{\cos \frac{\pi}{6} \cos \frac{\pi}{6}}$$

M-2

$$\cos^2 A + \cos^2 B - \cos A \cos B$$

$$\downarrow$$

$$(1 - \sin^2 A) + \cos^2 B - \cos A \cos B$$

$$1 + \cos(A+B) \cdot \cos(A-B) - \cos A \cos B$$

$$\downarrow$$

$$\pi/3$$

$$1 + \frac{1}{2} (\cos A \cos B + \sin A \sin B) - \cos A \cos B$$

$$1 + \frac{1}{2} (\sin A \sin B - \cos A \cos B)$$

$$1 - \frac{1}{2} (\cos A \cos B - \sin A \sin B)$$

$$= 1 - \frac{1}{2} \left( \frac{1}{2} \right)$$

$$1 - \frac{1}{4}$$

$$= \frac{3}{4}$$



The value of  $\cos^2 10^\circ - \cos 10^\circ \cos 50^\circ + \cos^2 50^\circ$  is:

- A.  $\frac{3}{4} + \cos 20^\circ$       B.  $\frac{3}{4}$  ✓  
C.  $\frac{3}{2}(1 + \cos 20^\circ)$       D.  $\frac{3}{2}$

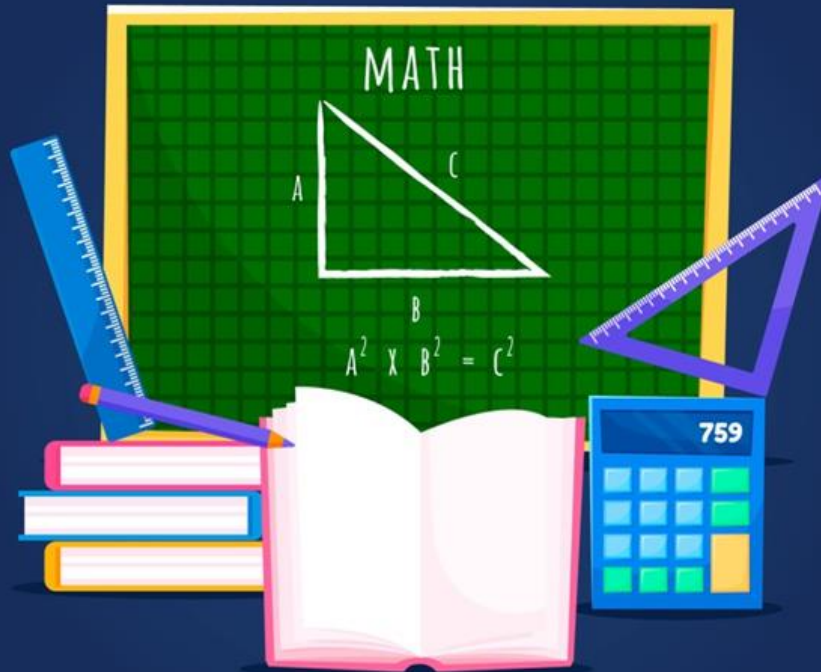
$$\cos^2 10^\circ - \cos 10^\circ \cos 50^\circ + \cos^2 50^\circ$$

JEE Main 2019 (April)





# T-Ratios of Multiple Angles





## T-Ratios of multiple angles

1

$$\sin 2A = 2 \sin A \cos A$$

$$\therefore \sin(A+B) = \sin A \cos B + \cos A \sin B$$

$$B \rightarrow A$$

$$\sin 2A = \sin A \cos A + \cos A \sin A$$

$$\boxed{\sin 2A = 2 \sin A \cos A}$$



$$\cot \theta + \tan \theta =$$

**A.**  $\tan 2\theta$

**B.**  $2 \cos 2\theta$

**C.**  $2 \operatorname{cosec} 2\theta$

**D.**  $\cot 2\theta$

$$\cot \theta + \tan \theta$$

$$\frac{\cos \theta}{\sin \theta} + \frac{\sin \theta}{\cos \theta}$$

$$= \frac{1}{\sin \theta \cos \theta}$$

$$= \frac{2}{2 \sin \theta \cos \theta}$$

$$= \frac{2}{\sin 2\theta}$$

$$= \boxed{2 \operatorname{cosec} 2\theta}$$





## T-Ratios of multiple angles

2

$$\begin{aligned}\cos 2A &= \cos^2 A - \sin^2 A \\ &= 2\cos^2 A - 1 \\ &= 1 - 2\sin^2 A\end{aligned}$$

$$\cos(A+B) = \cos A \cos B - \sin A \sin B$$

$$B \rightarrow A$$

$$\cos(2A) = \boxed{\cos^2 A - \sin^2 A}$$

$$\begin{cases} = 1 - \sin^2 A - \sin^2 A \\ = \boxed{1 - 2\sin^2 A} \end{cases}$$

$$\begin{cases} = \cos^2 A - (1 - \cos^2 A) \\ = \boxed{(2\cos^2 A - 1)} \end{cases}$$





$$\cos 2A = 2\cos^2 A - 1$$

$$1 + \cos 2A = 2\cos^2 A$$

$$\cos 2A = 1 - 2\sin^2 A$$

$$2\sin^2 A = 1 - \cos 2A$$



$$\frac{\sin \theta + \sin 2\theta}{1 + \cos \theta + \cos 2\theta}$$

is equal to

$$1 + \cos \theta + \cos 2\theta$$

**A.**  $\tan \theta$

**B.**  $\cot \theta$

**C.**  $\cos \theta - \cot \theta$

**D.**  $\cos \theta + \cot \theta$

$$\frac{\sin \theta + 2 \sin \theta \cos \theta}{1 + \cos \theta + (2 \cos^2 \theta - 1)}$$

$$\frac{\sin \theta (1 + 2 \cos \theta)}{\cos \theta (1 + 2 \cos \theta)}$$

$$= \frac{\sin \theta}{\cos \theta} = \tan \theta$$





## T-Ratios of multiple angles

3

$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

$B \rightarrow A$  :

$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$



## T-Ratios of multiple angles

4

$$\sin 2A = \frac{2 \tan A}{1 + \tan^2 A}$$

$$\begin{aligned} &= \frac{2(\sin A \cos A)}{\cos^2 A} \\ &= \frac{2 \tan A}{\sec^2 A} \end{aligned}$$

$$\cos 2A = \frac{1 - \tan^2 A}{1 + \tan^2 A}$$

$$\begin{aligned} &= \cos^2 A - \sin^2 A \\ &= \cos^2 A \left(1 - \frac{\sin^2 A}{\cos^2 A}\right) \\ &= \frac{1 - \tan^2 A}{\sec^2 A} \end{aligned}$$







## T-Ratios of multiple angles

5

$$\sin 3A = 3 \sin A - 4 \sin^3 A$$

$$\sin(A+B+C) = \underbrace{\sin A \cos B \cos C + \sin B \cos A \cos C}_{+ \sin C \cos A \cos B} - \sin A \sin B \sin C$$

$B \rightarrow A ; C \rightarrow A :$

$$\begin{aligned}\sin 3A &= 3 \sin A \cos^2 A - \sin^3 A \\ &= \underbrace{3 \sin A (1 - \sin^2 A)}_{\text{arrow}} - \sin^3 A\end{aligned}$$





## T-Ratios of multiple angles

6

$$\cos 3A = 4 \cos^3 A - 3 \cos A$$

$$\begin{aligned} \cos(A+B+C) = & \cos A \cos B \cos C - \underbrace{\cos A \sin B \sin C} \\ & - \underbrace{\cos B \sin A \sin C} - \underbrace{\cos C \sin A \sin B} \end{aligned}$$

$$B \rightarrow A^\circ, C \rightarrow A^\circ$$

$$\begin{aligned} \cos 3A &= \cos^3 A - 3 \cos A \sin^2 A \\ &= \cos^3 A - 3 \cos A (1 - \cos^2 A) \end{aligned}$$





## T-Ratios of multiple angles

7

$$\tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3 \tan^2 A}$$

$$\tan(A+B+C) = \frac{\tan A + \tan B + \tan C - \tan A \tan B \tan C}{1 - \tan A \tan B - \tan B \tan C - \tan C \tan A}$$

$B \rightarrow A$  ;  $C \rightarrow A$  :

$$\tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3 \tan^2 A}$$







$\frac{\sin^3 \theta + \sin 3\theta}{\cos^3 \theta - \cos 3\theta}$  is equal to

A.  $\tan \theta$

☒ B.  $\cot \theta$

C.  $\sin 2\theta$

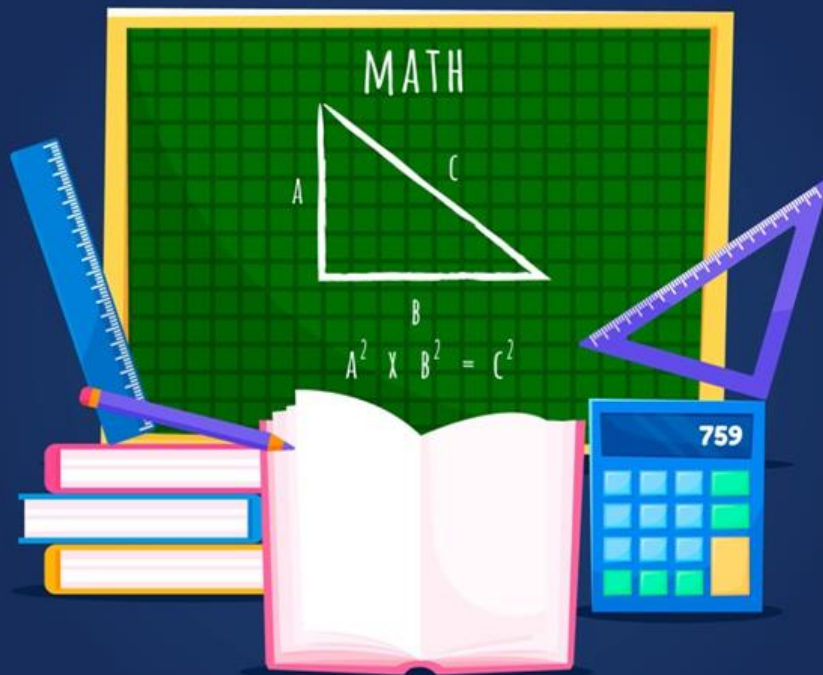
D.  $\cos 2\theta$

$$\begin{aligned} & \frac{\sin^3 \theta + \sin 3\theta}{\cos^3 \theta - \cos 3\theta} \\ &= \frac{\sin^3 \theta + 3\sin \theta - 4\sin^3 \theta}{\cos^3 \theta - (4\cos^3 \theta - 3\cos \theta)} \end{aligned}$$

$$\begin{aligned} &= \frac{3\sin \theta - 3\sin^3 \theta}{3\cos \theta - 3\cos^3 \theta} \\ &= \frac{\cancel{3}\sin \theta (1 - \sin^2 \theta)}{\cancel{3}\cos \theta (1 - \cos^2 \theta)} \\ &= \cot \theta \end{aligned}$$



# T-Ratios of Submultiple Angles





## T-Ratios of submultiple angles

1

$$\sin \theta = 2 \sin \frac{\theta}{2} \cos \frac{\theta}{2}$$

$$\sin 2A = 2 \sin A \cos A$$

$\downarrow$   
( $\theta/2$ )

$$\sin \theta = 2 \sin \frac{\theta}{2} \cos \frac{\theta}{2}$$



## T-Ratios of submultiple angles

2

$$2 \cos^2 \frac{\theta}{2} = 1 + \cos \theta$$

$$\cos 2A = 2\cos^2 A - 1$$

$\downarrow$   
 $\theta/2$

$$\cos \theta = 2\cos^2 \frac{\theta}{2} - 1$$



## T-Ratios of submultiple angles

3

$$2 \sin^2 \frac{\theta}{2} = 1 - \cos \theta$$

$$\cos \angle A = 1 - 2 \sin^2 A$$



$$\cos \theta = 1 - 2 \sin^2 \frac{\theta}{2}$$



## T-Ratios of submultiple angles

4

$$\tan \theta = \frac{2 \tan \frac{\theta}{2}}{1 - \tan^2 \frac{\theta}{2}}$$



## Half Angle Formulas !!!

$$\textcircled{1} \sin 2A = 2 \sin A \cos A$$

$$\textcircled{2} \sin A = 2 \sin \frac{A}{2} \cos \frac{A}{2}$$

$$\textcircled{3} \sin 4A = 2 \sin 2A \cos 2A$$

$$\textcircled{4} \sin 3A = 2 \sin \left( \frac{3A}{2} \right) \cos \left( \frac{3A}{2} \right)$$





$$\textcircled{5} \quad \sin \theta = 3 \sin \frac{\theta}{3} - 4 \sin^3 \frac{\theta}{3}$$

$$\sin \textcircled{3\theta} = 3 \sin \theta - 4 \sin^3 \theta$$



Simplify:  $\left( \frac{1 + \sin \theta - \cos \theta}{1 + \sin \theta + \cos \theta} \right)$

A.  $1 + \tan \frac{\theta}{2}$

B.  $1 - \cot \frac{\theta}{2}$

✓ C.  $\tan \frac{\theta}{2}$

D.  $\cot \frac{\theta}{2}$

$$\begin{aligned} & \frac{(1 - \cos \theta) + \sin \theta}{(1 + \cos \theta) + \sin \theta} \\ &= \frac{(2 \sin^2 \frac{\theta}{2}) + 2 \sin \frac{\theta}{2} \cos \frac{\theta}{2}}{(2 \cos^2 \frac{\theta}{2}) + 2 \sin \frac{\theta}{2} \cos \frac{\theta}{2}} \end{aligned}$$

$$\begin{aligned} \cos 2A &= 2 \cos^2 A - 1 \\ \cos 2A &= 1 - 2 \sin^2 A \end{aligned}$$

$$= \frac{2 \sin \theta_2 (\cancel{\sin \theta_2 + \cos \theta_2})}{2 \cos \theta_2 (\cancel{\cos \theta_2 + \sin \theta_2})}$$
$$= \tan \frac{\theta}{2}$$



If  $0 < \theta < \frac{\pi}{16}$ , then  $\sqrt{2 + \sqrt{2 + \sqrt{2 + 2 \cos 8\theta}}}$  is equal to

A.  $2 \sin \theta$

B.  $2 \tan \theta$

C.  $2 \cot \theta$

✓ D.  $2 \cos \theta$

$$\begin{aligned} &= \sqrt{2 + \sqrt{2 + \sqrt{2(1 + \cos 8\theta)}}} \\ &= \sqrt{2 + \sqrt{2 + \sqrt{2(2\cos^2 4\theta)}}} \end{aligned}$$

$$\sqrt{x^2} = |x|$$

$$\text{If } x > 0$$

$$\sqrt{x^2} = x$$

$$\cos 2A = 2\cos^2 A - 1$$

$$\begin{aligned} &(1 + \cos 2A) \\ &= 2\cos^2 A \end{aligned}$$

$$= \sqrt{2 + \sqrt{2 + 2\cos 4\theta}}$$

$$= \sqrt{2 + \sqrt{2(1 + \cos 4\theta)}}$$

$$= \sqrt{2 + \sqrt{2(2\cos^2 2\theta)}}$$

$$= \sqrt{2 + 2\cos 2\theta}$$

$$= \sqrt{2(1 + \cos 2\theta)}$$

$$= \sqrt{2(2\cos^2 \theta)}$$

$$= 2\cos \theta$$



$$\left(\frac{\sin 3\theta}{\sin \theta}\right)^2 - \left(\frac{\cos 3\theta}{\cos \theta}\right)^2 = \boxed{a} \cos 2\theta, \text{ wherever it is defined.}$$

Then the value of  $a$  is

**A.** 1

**B.** 0

**C.** 2

**D.** 8

Ans =

$$= \left(\frac{3\sin\theta - 4\sin^3\theta}{\sin\theta}\right)^2 - \left(\frac{4\cos^3\theta - 3\cos\theta}{\cos\theta}\right)^2$$

$$= (3 - 4\sin^2\theta)^2 - (4\cos^2\theta - 3)^2$$

$$= (\cancel{9} + \underline{16\sin^4\theta} - 24\sin^2\theta)$$

$$- (\underline{16\cos^4\theta} + \cancel{9} - 24\cos^2\theta)$$

$$= 16(\sin^4\theta - \cos^4\theta) + 24(\cos^2\theta - \sin^2\theta)$$

$$= 16(\underbrace{\sin^2\theta + \cos^2\theta})(\underline{\sin^2\theta - \cos^2\theta}) + 24(\underbrace{\cos^2\theta - \sin^2\theta})$$

$$= 24\cos 2\theta - 16\cos 2\theta \rightarrow$$

$$\boxed{8\cos 2\theta}$$



If  $2 \cos \theta = x + \frac{1}{x}$ , find the values of the following in terms of cosine

More than one correct

of the multiple angle of  $\theta$ .

✓ **A.**  $x^2 + \frac{1}{x^2} = 2 \cos 2\theta$

**B.**  $x^2 + \frac{1}{x^2} = 3 \cos 2\theta$

✓ **C.**  $x^3 + \frac{1}{x^3} = \underline{\underline{2 \cos 3\theta}}$

**D.**  $x^3 + \frac{1}{x^3} = 3 \cos 3\theta$

$$2 \cos \theta = x + \frac{1}{x}$$

Square both sides.

$$\Rightarrow 4 \cos^2 \theta = x^2 + \frac{1}{x^2} + 2$$

$$\begin{aligned} x^2 + \frac{1}{x^2} &= 4 \cos^2 \theta - 2 \\ &= 2(2 \cos^2 \theta - 1) \\ &= \boxed{2 \cos 2\theta} \end{aligned}$$



Now,

$$x + \frac{1}{x} = \underline{\underline{2\cos\theta}}$$

Cube both sides-

$$x^3 + \frac{1}{x^3} + \cancel{3\left(\cancel{x}\right)\left(\cancel{\frac{1}{x}}\right)\left(x + \frac{1}{x}\right)} = 8\cos^3\theta$$

$$\begin{aligned}\Rightarrow x^3 + \frac{1}{x^3} &= 8\cos^3\theta - 6\cos\theta \\ &= 2(4\cos^3\theta - 3\cos\theta) = \boxed{2\cos 3\theta}\end{aligned}$$



The value of  $\cos^3\left(\frac{\pi}{8}\right) \cdot \cos\left(\frac{3\pi}{8}\right) + \sin^3\left(\frac{\pi}{8}\right) \cdot \sin\left(\frac{3\pi}{8}\right)$  is

A.  $\frac{1}{\sqrt{2}}$

B.  $\frac{1}{2\sqrt{2}}$

C.  $\frac{1}{2}$

D.  $\frac{1}{4}$

HW

JEE Main 2020 (Jan)





# #JEELiveDaily Schedule



11<sup>th</sup>



Namo Sir | Physics

6:00 - 7:30 PM



Ashwani Sir | Chemistry

7:30 - 9:00 PM



Sameer Sir | Maths

9:00 - 10:30 PM

12<sup>th</sup>



Jayant Sir | Physics

1:30 - 3:00 PM



Anupam Sir | Chemistry

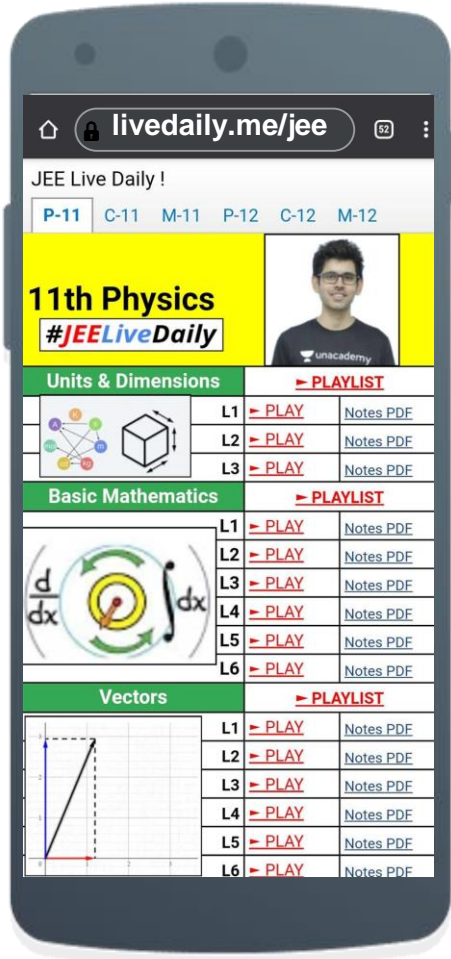
3:00 - 4:30 PM



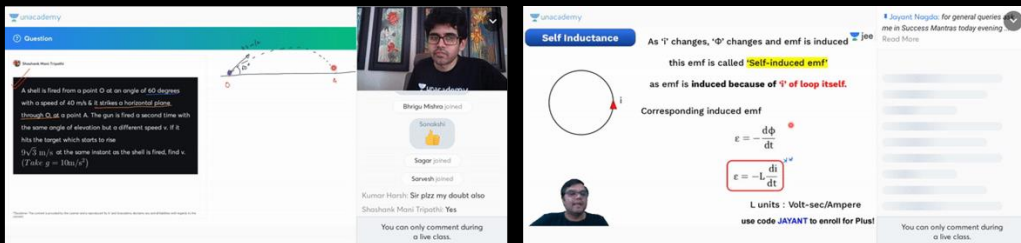
Nishant Sir | Maths

4:30 - 6:00 PM

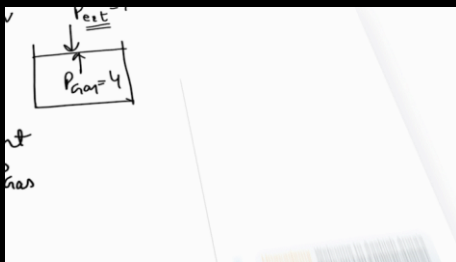
livedaily.me/jee



# Unacademy Subscription

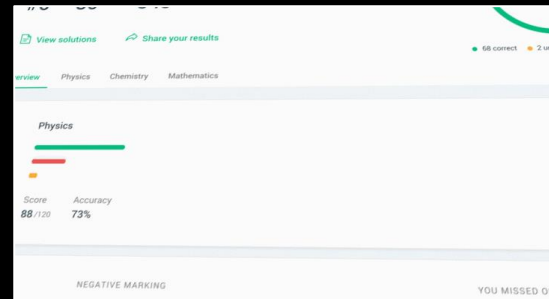
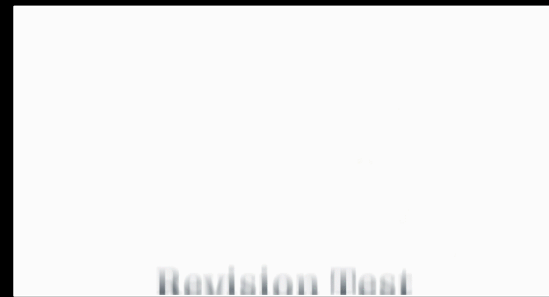


The image shows two screenshots from the Unacademy live class interface. The left screenshot displays a physics problem: "A shell is fired from a point O at an angle of 60 degrees with a speed of 40 m/s. It strikes a horizontal plane through O at a point A. The gun is fired a second time with the same angle of elevation but a different speed  $v$ . If it hits the target which starts to rise  $(\sqrt{3}/2) \text{ m/s}^2$  at the same instant as the shell is fired, find  $v$ . (Take  $g = 10 \text{ m/s}^2$ )". The right screenshot shows a lecture on "Self Inductance" with the text: "As  $\vec{I}$  changes,  $\vec{\Phi}$  changes and emf is induced. This emf is called **Self-induced emf** as emf is induced because of  $\vec{I}$  of loop itself." It also includes the formula for induced emf:  $\mathcal{E} = -\frac{d\Phi}{dt}$  and  $\mathcal{E} = -L \frac{di}{dt}$ , and mentions "L units: Volt-sec/Ampere" and "use code JAYANT to enroll for Plus!".



## + **LIVE** Class Environment

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

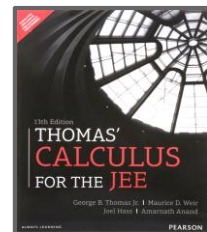
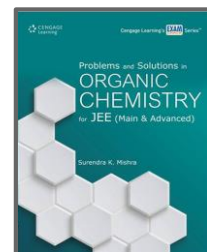


## + **Performance Analysis**

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

# Unacademy Subscription

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







jee

# 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



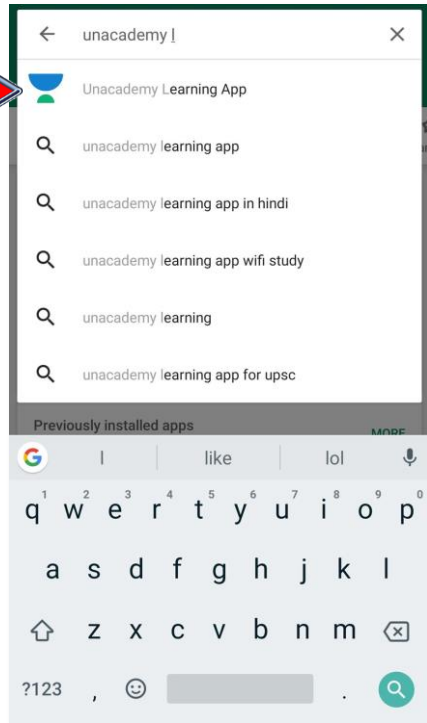
Naman Goyal  
98.48



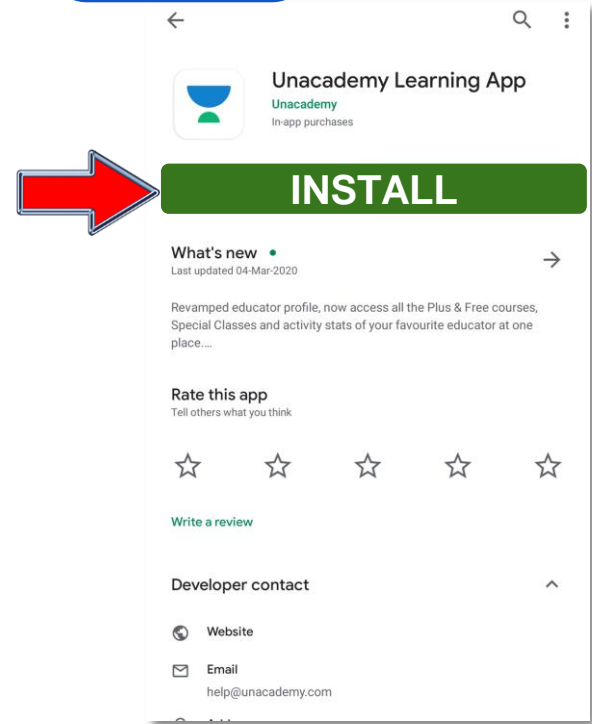
MIHIR PRAJAPATI  
98.16

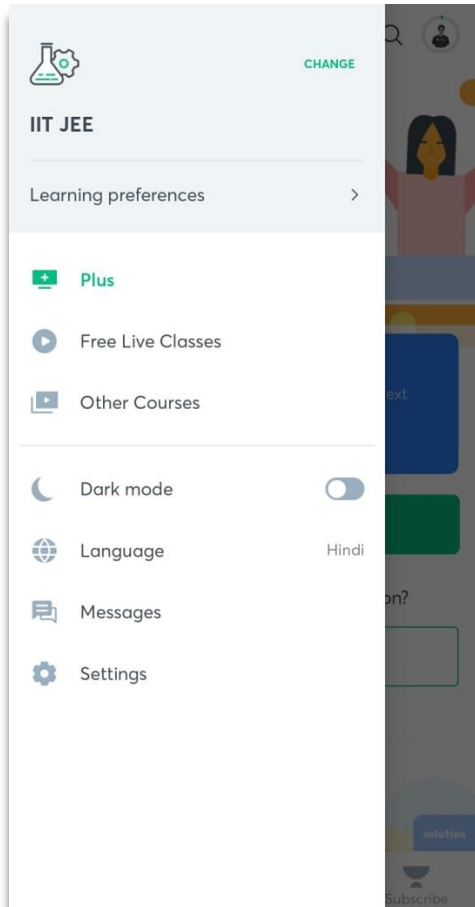


## Step 1



## Step 2







## IIT JEE subscription

PLUS

ICONIC

- ✓ India's Best Educators
- ✓ Interactive Live Classes
- ✓ Structured Courses & PDFs
- ✓ Live Tests & Quizzes
- × Personal Coach
- × Study Planner

24 months

₹2,100/mo



No cost EMI

+10% OFF ₹50,400

11<sup>th</sup> / 9, 10

18 months

₹2,363/mo



No cost EMI

+10% OFF ₹42,525

12 months

₹2,888/mo



No cost EMI

+10% OFF ₹34,650

12<sup>th</sup> / Drop

6 months

₹4,200/mo



No cost EMI

+10% OFF ₹25,200

3 months

₹5,250/mo



+10% OFF ₹15,750

1 month

₹6,200/mo



**SAMEERLIVE**





# IIT JEE MEGA SUBSCRIPTION OFFER

For 2022 Aspirants

Buy 1 Year Unacademy Subscription and get additional

**3 MONTHS FREE**

For 2023 Aspirants

Buy 2 Year Unacademy Subscription and get additional

**4 MONTHS FREE**



Limited Period

**OFFER**



# EMERGE 3.0 BATCH

**JEE Main & Advanced 2023**

**Starting on 12th May**







**UNACADEMY  
COMBAT**  
COMPETE. CRACK. CONQUER.

 jee

# India's Biggest Free Scholarship Test for IIT-JEE Aspirants

- Free Registration.
- Scholarship for Top 150 rankers.
- 100% scholarship for Top 3 rankers

**Win scholarship from a pool of 4Cr+**

\*Terms and conditions apply

**IIT-JEE Combat: Every Sunday | 11 AM**

**Enroll now**

**USE CODE -**

**SAMEERLIVE**



# Thank You



@sameer\_iitr



#JEE Live Daily



+ SUBSCRIBE



jee

PDF



Download Now !

