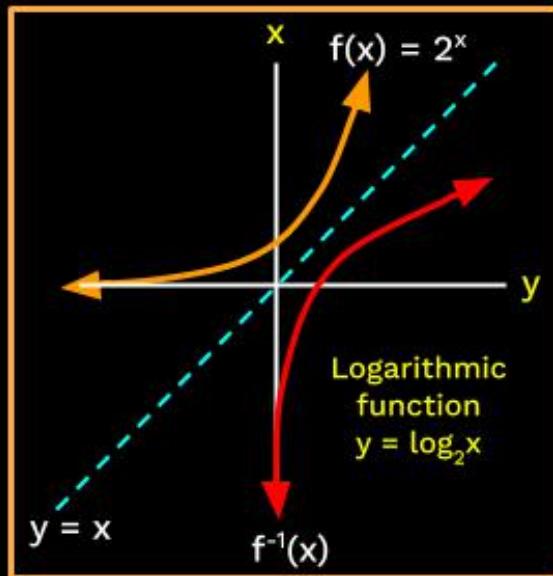
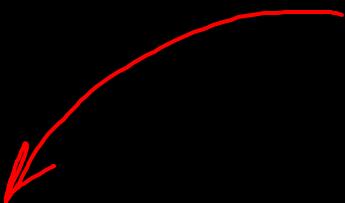


Functions

DPP 6

Logarithmic Function - 2



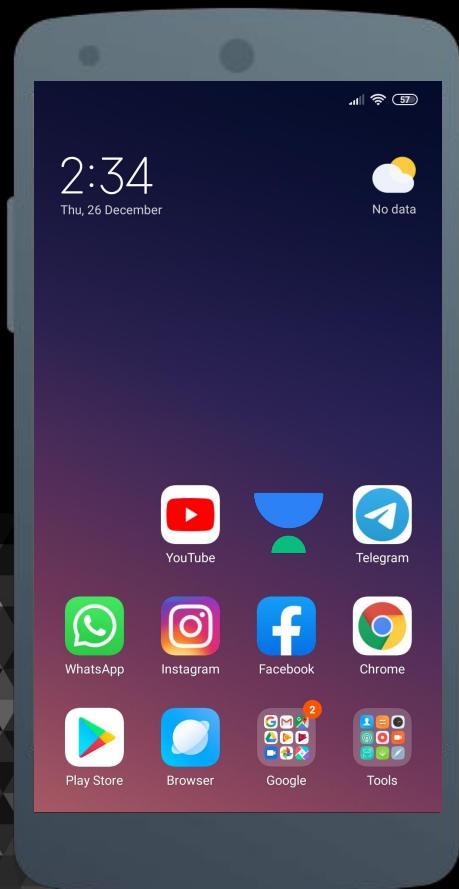


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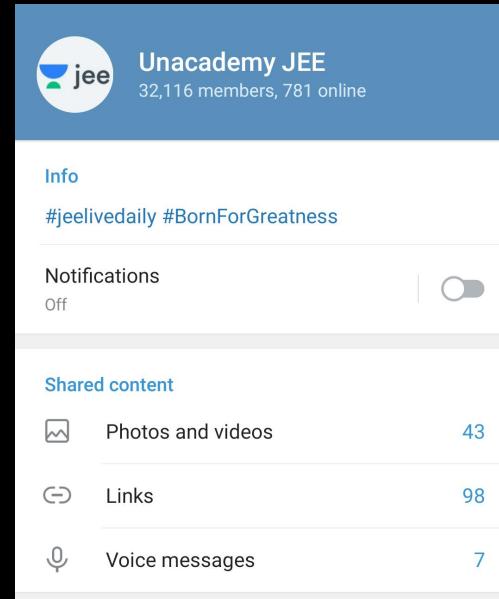


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The screenshot shows the Telegram group info page for "Unacademy JEE". The group has 32,116 members and 781 online users. The bio includes the hashtags #jeelivedaily and #BornForGreatness. The notifications setting is turned off. The shared content section shows 43 photos and videos, 98 links, and 7 voice messages.

Category	Count
Photos and videos	43
Links	98
Voice messages	7

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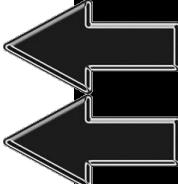
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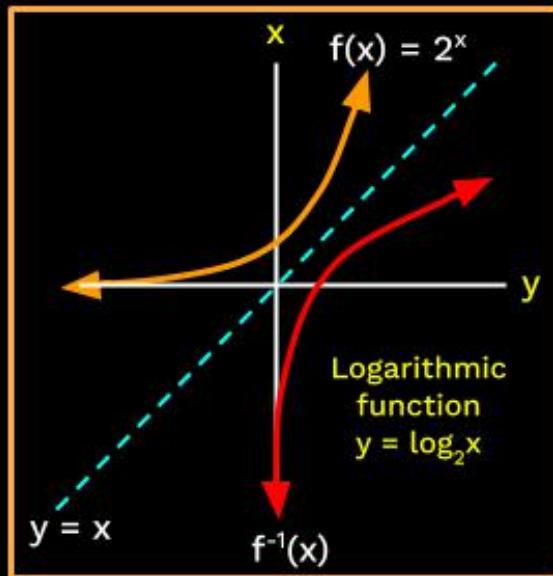


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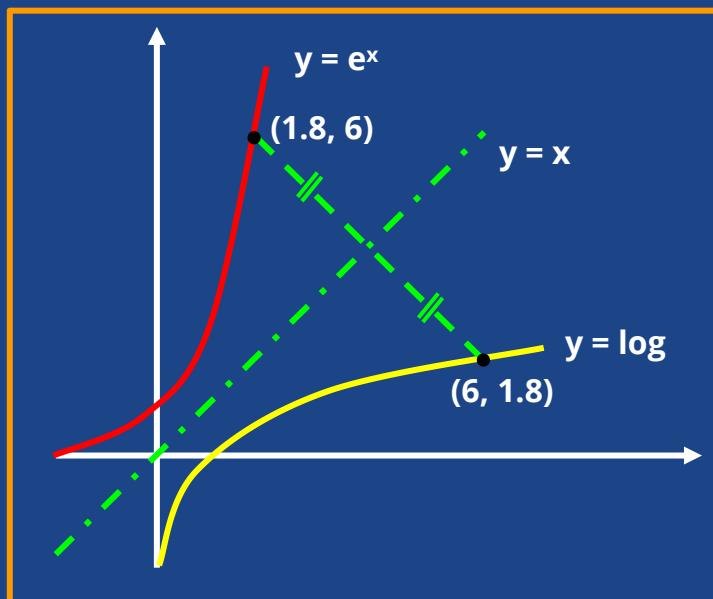
Functions

DPP 6

Logarithmic Function - 2



Homework Question



If $\log_2 x + \log_x 2 = \frac{10}{3}$ and $x \neq y$, then $x + y$ is equal to

- A. 2 B. $65/8$ C. $37/6$ D. None of these

Let:

$$\log_2 n = t$$

$$\Rightarrow \log_n 2 = \frac{1}{t}$$

$$t + \frac{1}{t} = \frac{10}{3}$$

$$3t^2 + 3 = 10t$$

$$3t^2 - 10t + 3 = 0$$

$$3t^2 - 9t - t + 3 = 0$$

$$(3t-1)(t-3) = 0$$

$$t = 3, \frac{1}{3}$$

$$\Rightarrow \log_2 n = 3 ; \log_2 y = \frac{1}{3}$$

$$n = 8$$

$$y = 2^{1/3}$$



Find the value of: $5^{\log_{1/5}\left(\frac{1}{2}\right)} + \log_{\sqrt{2}}\frac{4}{\sqrt{7}+\sqrt{3}} + \log_{1/2}\frac{1}{10+2\sqrt{21}}$

A. 4

B. 6

C. 8

D. 10

$$\Rightarrow 5^{\log_{(5^{-1})}(2^{-1})}$$

↓

$$= 5^{\log_5 2}$$

2

$$\begin{aligned}
 & \log_{(2)^{-1}}\left(\frac{4}{\sqrt{7}+\sqrt{3}}\right) + \log_{(2)^{-1}}\left(\frac{1}{10+2\sqrt{21}}\right) \\
 & \quad \downarrow \\
 & \log_2\left(\frac{4}{\sqrt{7}+\sqrt{3}}\right) + \log_2\left(\frac{1}{10+2\sqrt{21}}\right)
 \end{aligned}$$

$$\log_2 \left(\frac{4}{\sqrt{7} + \sqrt{3}} \right)^2 + \log_2 \underbrace{\left(\frac{1}{10 + 2\sqrt{21}} \right)^{-1}}$$

$$\log_2 \left(\frac{16}{(7+3+2\sqrt{3})} \times \cancel{(10+2\sqrt{21})} \right)$$

$$\log_2^{16} = \log_2^4 = \textcircled{4}$$



The sum of values of x satisfying the following equation is:

$$\log_3 \left(\frac{x-3}{x-7} \right) + \frac{1}{2} = \log_9 \left(\frac{x-3}{x-1} \right)$$

5

A. 2

B. -2

C. -1

D. -5

~~(2)~~ $\log_3 \left(\frac{x-3}{x-7} \right) + \cancel{\frac{1}{2}} (\log_3 3) = \cancel{\frac{1}{2}} \log_3 \left(\frac{x-3}{x-1} \right)$

$$\log_3 \left(\frac{x-3}{x-7} \right)^2 + \log_3 (3) = \log_3 \left(\frac{x-3}{x-1} \right)$$

$$\log_3 \left[3 \left(\frac{x-3}{x-7} \right)^2 \right] = \log_3 \left[\left(\frac{x-3}{x-1} \right) \right]$$

$$3 \cdot \frac{(n-3)^2}{(n-7)^2} = \left(\frac{n-3}{n-1}\right)$$

$$\Rightarrow \frac{3(n-3)^2}{(n-7)^2} - \frac{(n-3)}{(n-1)} = 0$$

$$\Rightarrow (n-3) \left\{ \frac{(3n-9)}{(n-7)^2} - \frac{1}{(n-1)} \right\} = 0$$

$$(n-3) \left[\frac{(3n-9)(n-1) - (n-7)^2}{(n-7)^2 (n-1)} \right] = 0$$

$$(n-3) \left[3n^2 - 12n + 9 - n^2 + 14n - 49 \right] = 0$$

$$(n-3) \left[2n^2 + 2n - 40 \right] = 0$$

$$(n-3) \left[n^2 + 8n - 20 \right] = 0$$

$$(n-3)(n+5)(n-4) = 0$$

$$n = \begin{matrix} 3, \\ \times \end{matrix}, \begin{matrix} 4, \\ \times \end{matrix}, \begin{matrix} -5 \\ \checkmark \end{matrix}$$



The number of values of x satisfying the equation

$$\boxed{x} \log_3 x^2 + (\log_3 x)^2 - 10 = \frac{1}{x^2} \text{ is } \boxed{n}^{-2}$$

5

A. 1

B. 2

C. 3

D. 4

$$\underbrace{\log_3 n}_{\circ} (2 \log_3 n + (\log_3 n)^2 - 10) = \log_3 (n^{-2})$$

$$(2 \log_3 n + (\log_3 n)^2 - 10) (\log_3 n) = -2 (\log_3 n)$$

Let: $\boxed{\log_3 n = t}$

$$\underbrace{(2t + t^2 - 10)}_{\text{sum}}(t) = \underbrace{-2}_{\text{constant}}(t)$$

$$t \left[2t + t^2 - 10 + 2 \right] = 0$$

$$t(t^2 + 2t - 8) = 0$$

$$t(t+4)(t-2) = 0$$

$$\boxed{t = 0, -4, 2}$$

$$\log_3 n = 0 \rightarrow n = 1 \checkmark$$

$$\log_3 n = -4 \rightarrow n = \frac{1}{81}$$

$$\log_3 n = 2 \rightarrow n = 9$$



Find the domain of $f(x) = \left[\frac{3}{4-x^2} \right] + \left[\log_{10}(x^3 - x) \right]$

5

A. $(1, 2)$

B. $(-1, 0) \cup (1, 2)$

C. $(1, 2) \cup (2, \infty)$

D. $(-1, 0) \cup (1, 2) \cup (2, \infty)$

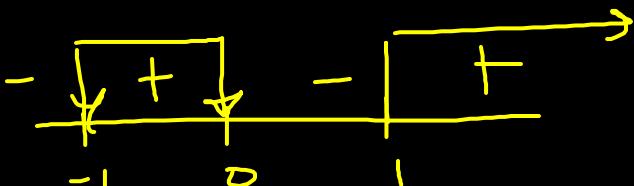
$D_1: 4-x^2 \neq 0$

$$\boxed{x \neq \pm 2}$$

$\pi(x^2 - 1) > 0$

$\pi(\pi-1)(\pi+1) > 0$

$D_2: \underline{\underline{x^3 - x}} > 0$



$$\boxed{x \in (-1, 0) \cup (1, \infty)}$$

$D_1 \cap D_2$

$(-1, 0) \cup (1, 2) \cup (2, \infty)$



The set of $\{x: \log_{1/3} \log_4(x^2 - 5) > 0\}$ is equal to

(a) $(3, \infty)$

(b) $(\sqrt{6}, 3)$

5

~~(c) $(-3, -\sqrt{6}) \cup (\sqrt{6}, 3)$~~

(d) $(\sqrt{6}, \infty)$

$$\log_{1/3} \log_4(x^2 - 5) > 0$$

$$0 < \log_4(x^2 - 5) < 1$$

$$1 < \boxed{\log_4(x^2 - 5)} < 4$$

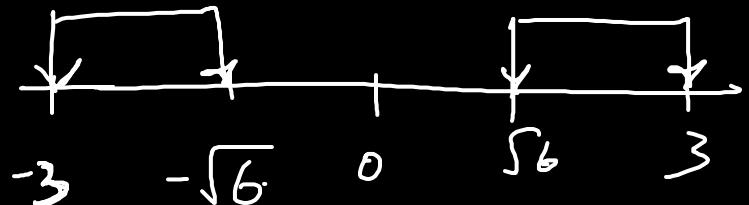
$$6 < x^2 < 9$$

$$\begin{array}{l} \swarrow \quad \searrow \\ x^2 > 6 \quad x^2 < 9 \end{array}$$

M-1

$$6 < n^2 < 9$$

$$\sqrt{6} < |n| < 3$$



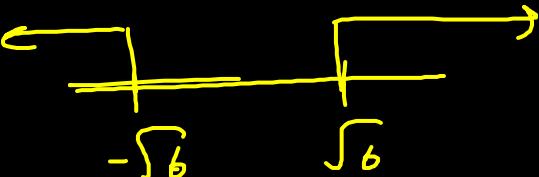
$$x \in (-3, -\sqrt{6}) \cup (\sqrt{6}, 3)$$

M-2

$$n^2 > 6$$

$$n^2 - (\sqrt{6})^2 \geq 0$$

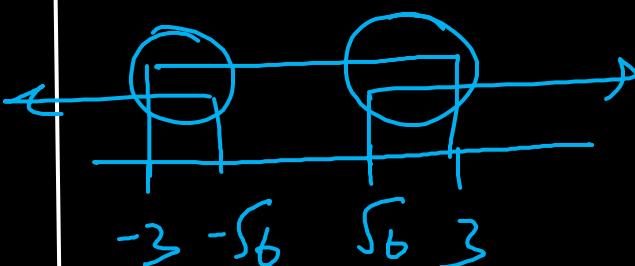
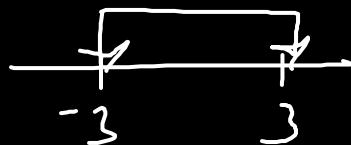
$$(n - \sqrt{6})(n + \sqrt{6}) \geq 0$$



$$n^2 < 9$$

$$n^2 - 3^2 < 0$$

$$(n - 3)(n + 3) < 0$$



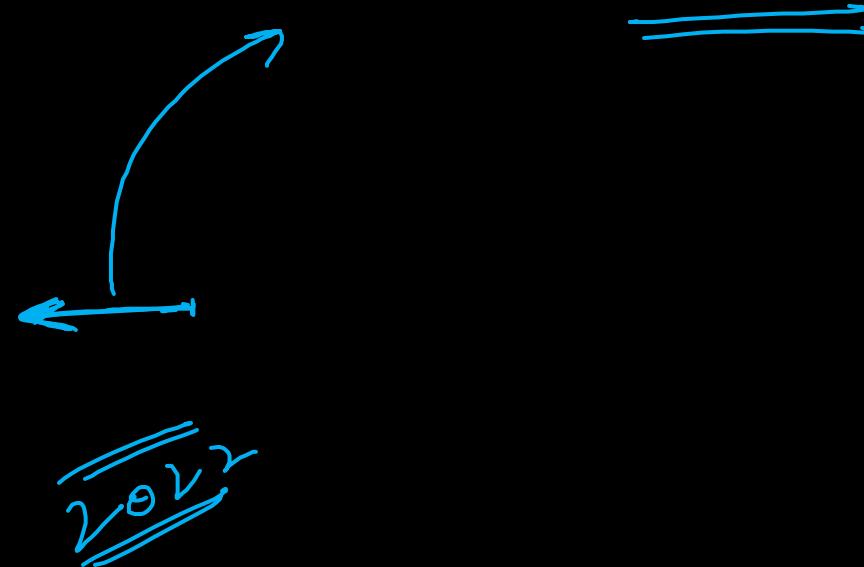
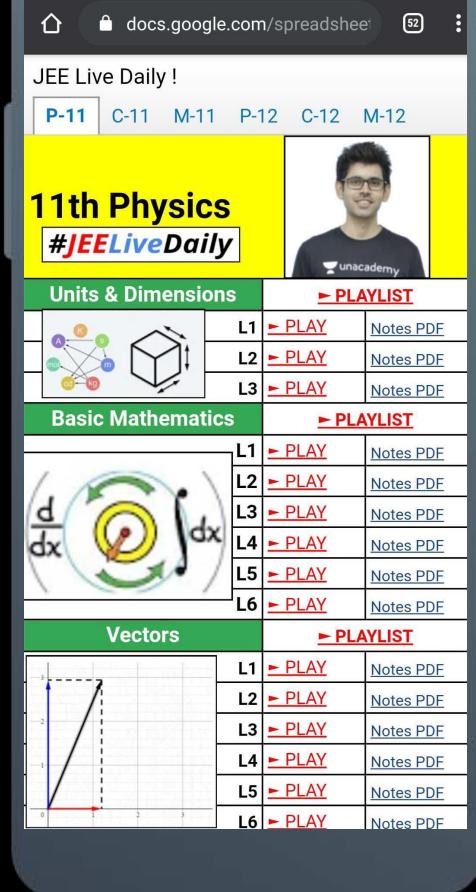


Solve for x: $\log_{(x+6)} \left(\underline{\log_2 \left(\frac{x+2}{x-1} \right)} \right) > 0$

*

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The screenshot shows a Unacademy 'Question' interface. At the top, there's a profile picture of Rohit Sachan and a sidebar with user activity. The main area displays a chemistry problem:

Q. In the following reaction, NO_2^+ reacts with X , the structure of the major product X' is -

Reaction scheme:

$\text{NO}_2^+ + \text{X} \rightarrow \text{X}'$

Options:

- $\text{X}' = \text{O}_2\text{N}-\text{C}_6\text{H}_4-\text{NH}_2$
- $\text{X}' = \text{O}_2\text{N}-\text{C}_6\text{H}_4-\text{NO}_2$
- $\text{X}' = \text{O}_2\text{N}-\text{C}_6\text{H}_3(\text{NO}_2)_2$
- $\text{X}' = \text{O}_2\text{N}-\text{C}_6\text{H}_3(\text{NO}_2)_2-\text{NO}_2$

A handwritten note on the right side of the reaction scheme indicates electron movement from the phenoxide oxygen to the nitro group, with the text "e⁻ deficient" and "HNO₃ / H₂SO₄". Below the reaction scheme, a handwritten note says " $\text{E}^+ \rightarrow$ attacks on e⁻ rich system".

The screenshot shows a 'Physics' score report from a test series. At the top, there are 'View solutions' and 'Share your results' buttons.

Score details:

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- Accuracy: 73%

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Question

ROHIT SACHAN:

Sir please solve the one more doubt...

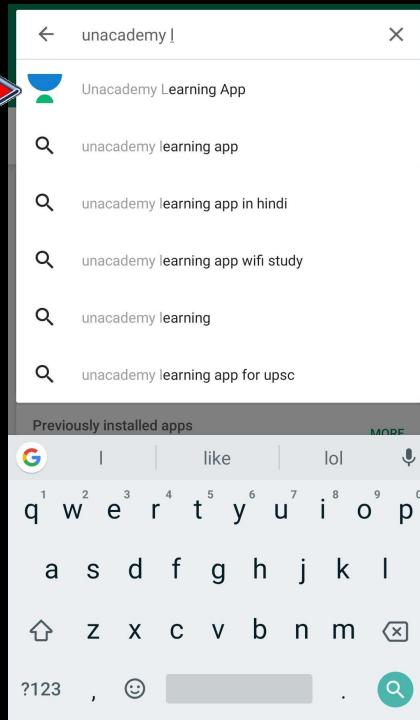
16. In the following reaction, NO_2^+ attacks on e^- rich system.

NO_2^+ → attacks on e^- rich system

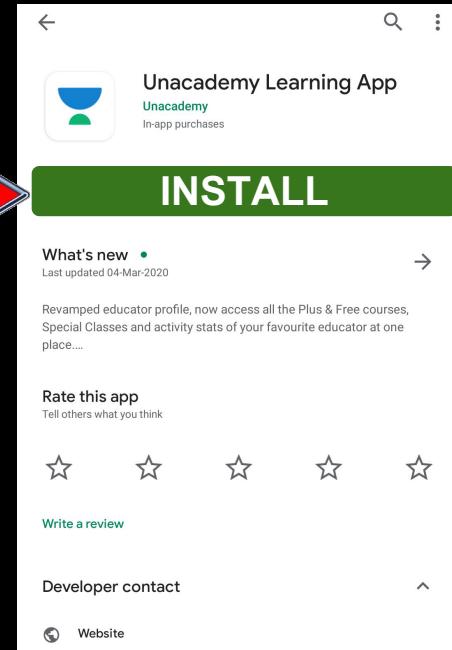
Participants:

- Sir Rohit Sachan
- Chaudhuri
- nATion
- Rohit Sachan Sir B aa rha mera
- Sirchan Dutta Chaudhuri right
- Shoaib Alam Left
- Vsvsgsg Right
- Prashant Singh joined
- Rohit Sachan Left

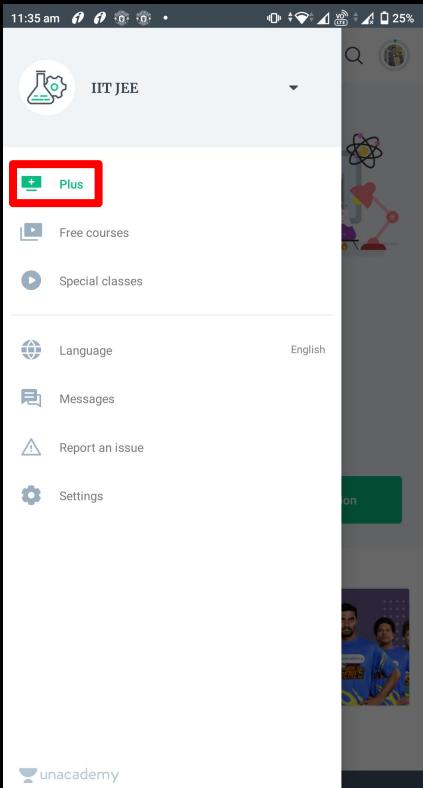
Step 1



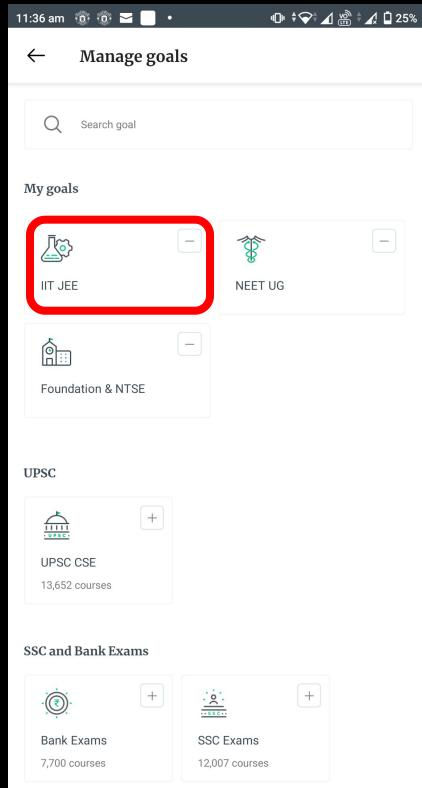
Step 2



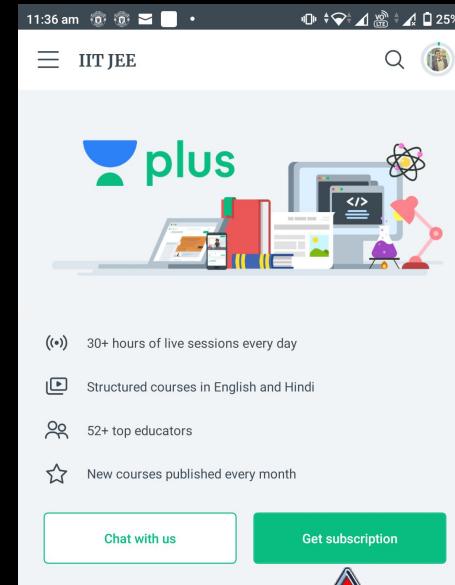
Step 3



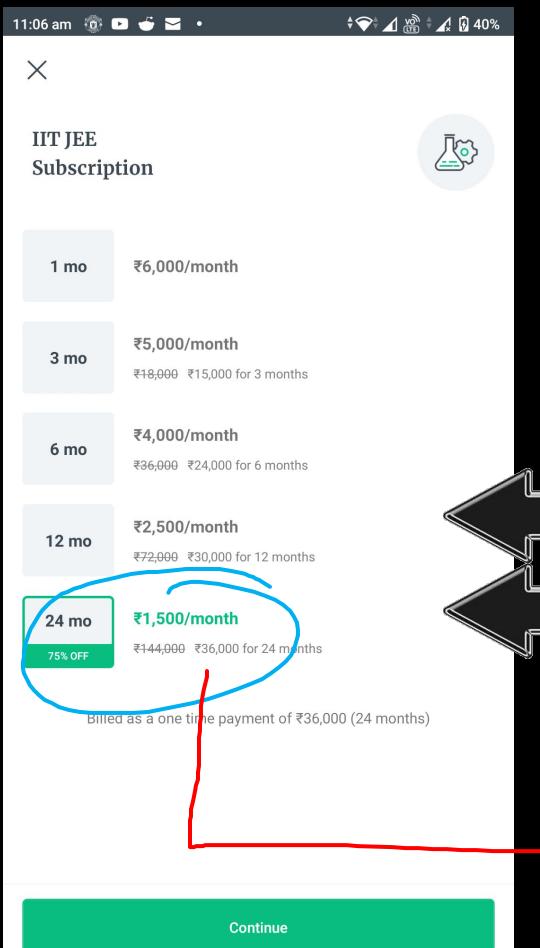
Step 4



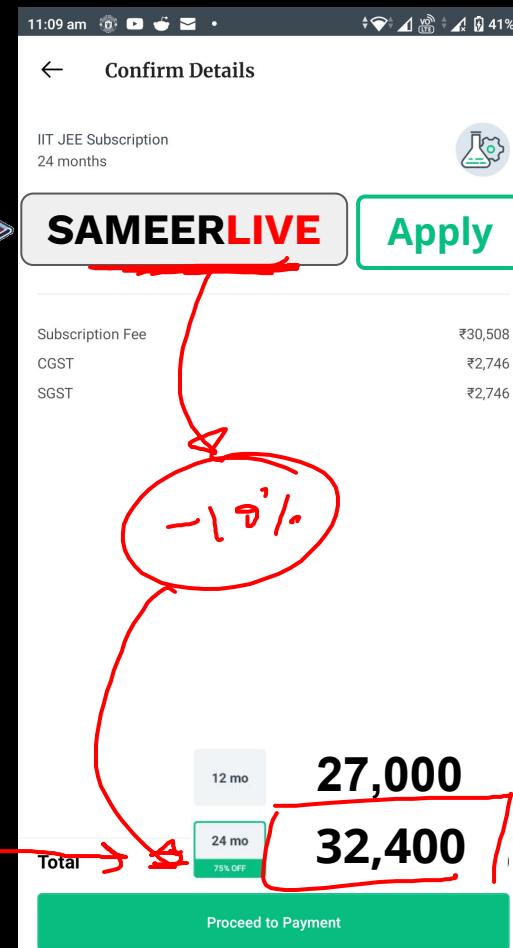
Step 5



Step 6

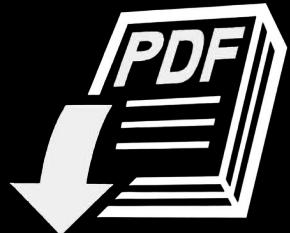


Step 7





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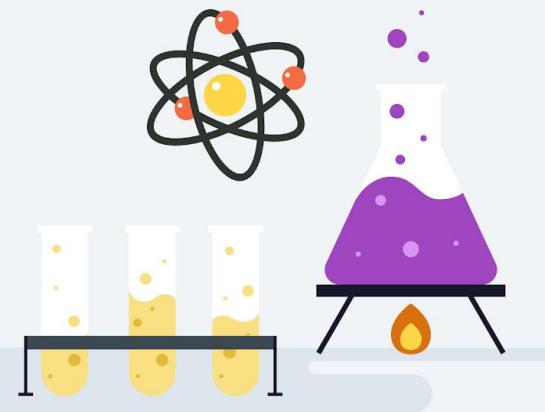




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