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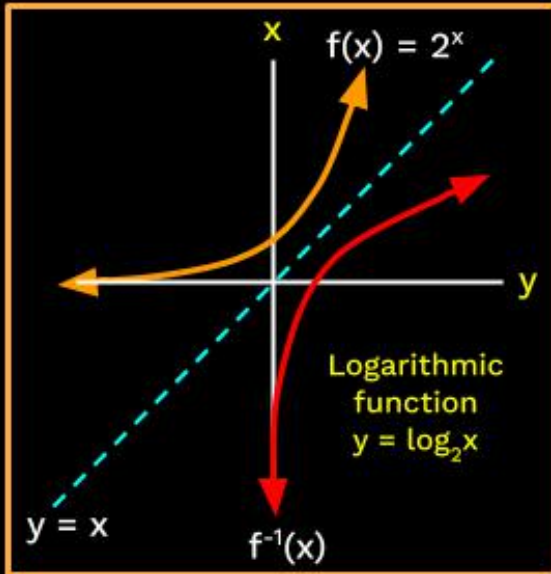
quiz 2.0

Functions

DPP

5

Logarithmic Function - 1





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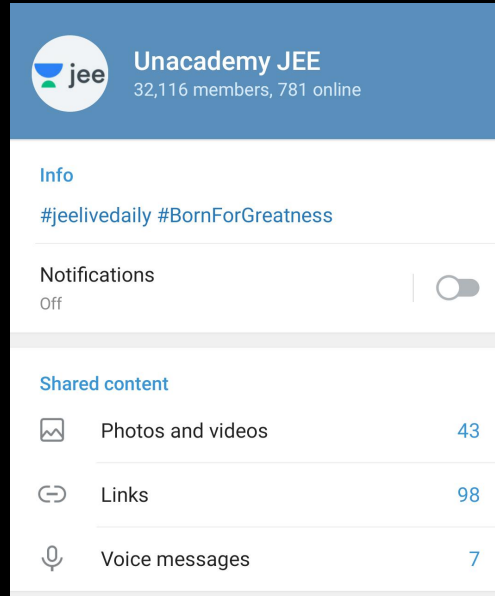
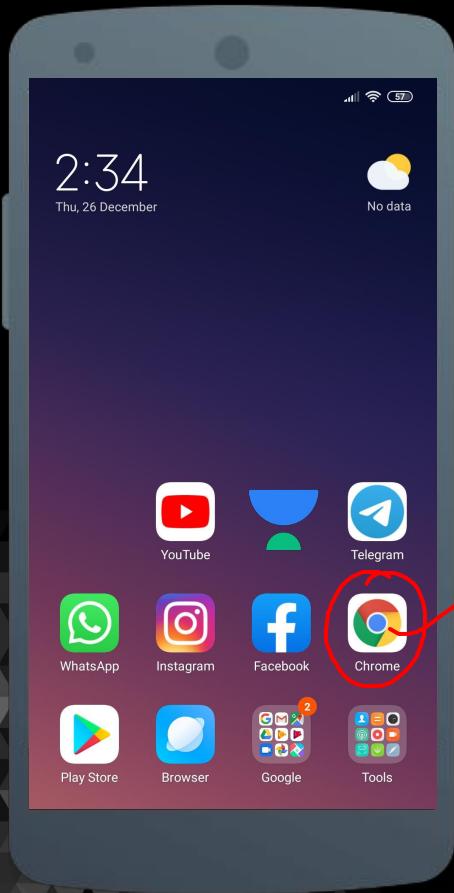
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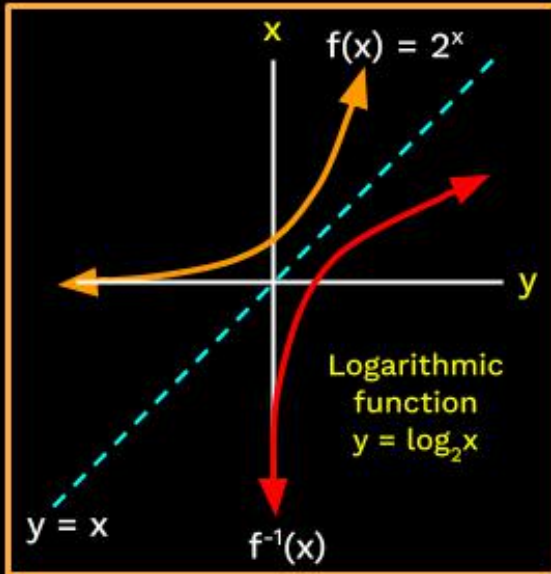
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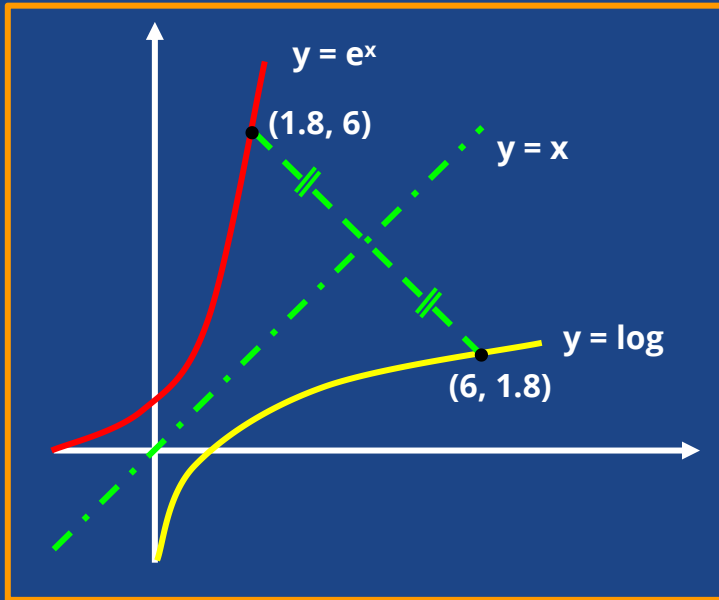
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Logarithmic Function - 1



Homework Question



Example

Find the domain of $f(x) = \sqrt{\log_{\frac{1}{4}} \log_{\frac{1}{3}} \log_{\frac{1}{2}} x}$

$$\log_{\frac{1}{4}} \log_{\frac{1}{3}} \log_{\frac{1}{2}} x \geq 0$$

$$0 < \log_{\frac{1}{3}} \log_{\frac{1}{2}} x \leq \frac{1}{4}$$

$$1 > \log_{\frac{1}{2}} x \geq \frac{1}{3}$$

$$\left(\frac{1}{2}\right)^1 < x \leq \left(\frac{1}{2}\right)^{\frac{1}{3}}$$

$$x \in \left(\frac{1}{2}, \left(\frac{1}{2}\right)^{\frac{1}{3}}\right]$$



The value of following expression is:

5

$$\frac{1}{1 + \log_a b + \log_a c} + \frac{1}{1 + \log_b c + \log_b a} + \frac{1}{1 + \log_c a + \log_c b}$$

$\log_a a \rightarrow$ $\log_b b \rightarrow$ $\log_c c \rightarrow$

A. abc B. $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$ C. $\frac{1}{abc}$ D. -1

$$\frac{1}{\log_a(abc)} + \frac{1}{\log_b(abc)} + \frac{1}{\log_c(abc)}$$
$$= \log_{abc}(a) + \log_{abc}(b) + \log_{abc}(c)$$

$$\log_{\underline{abc}}(\underline{a \cdot b \cdot c}) = \textcircled{1}$$



If $\frac{\log_{10} a}{\underline{b-c}} = \frac{\log_{10} b}{\underline{c-a}} = \frac{\log_{10} c}{\underline{a-b}} = \underline{K}$ then find the value of $a^a b^b c^c$

A. abc B. $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$ C. 1 D. -1

5

$$\frac{\log_{10} a}{(b-c)} = K$$

$$\log_{10} a = K(b-c)$$
$$a = 10^{K(b-c)}$$

$$\left. \begin{aligned} a^a &= 10^{K(\underline{ab} - \underline{ac})} \\ b^b &= 10^{K(\underline{bc} - \underline{ba})} \\ c^c &= 10^{K(\underline{ca} - \underline{cb})} \end{aligned} \right\}$$

$$a^a \cdot b^b \cdot c^c = 10^{K(0)} = \underline{1}$$



If **x, y, z** are different &

$$\frac{(\log x)^2}{(\log y)(\log z)} + \frac{(\log y)^2}{(\log z)(\log x)} + \frac{(\log z)^2}{(\log x)(\log y)} = 3$$

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Then **x.y.z** is equal to:

5

let: $\log x = a$; $\log y = b$; $\log z = c$

$$\frac{a^2}{\underline{bc}} + \frac{b^2}{\underline{ca}} + \frac{c^2}{\underline{ab}} = 3 \quad \left\{ \begin{array}{l} a^3 + b^3 + c^3 = 3abc \end{array} \right.$$

$$\frac{a^3 + b^3 + c^3}{(abc)} = 3$$

$$\Rightarrow a + b + c = 0$$

$$\Rightarrow \log x + \log y + \log z = 0$$

$$\Rightarrow \log_{10}(xyz) = 0$$

$$\Rightarrow \boxed{xyz = 1}$$



If $\log_{20} 2 = a$ and $\log_{20} 5 = b$

Then the value of the $\log_{20} 8$ in terms of 'a' and 'b' is:

A. $3(1 - a - b)$

B. $3(1 + a + b)$

C. $3(a + b - 1)$

D. None

$$\log_{20} 8$$

$$= 3 \log_{20} 2$$

$$= 3 \log_{20} \left(\frac{20}{10} \right)$$

$$= 3 (\log_{20} 20 - \log_{20} 10)$$

$$= 3 (1 - (\log_{20} 2 + \log_{20} 5))$$

$$= \boxed{3(1 - a - b)}$$



The number of solutions of the equation $x^{\log_x(x+3)^2} = 16$ is/are

A. 3

B. 2

C. 1

D. Nil

5

$$\underbrace{a^{\log_a N}}_{\text{base}} = N$$

Domain:

$$\begin{aligned} x &> 0 \\ x &\neq 1 \end{aligned}$$

$$\Rightarrow (x+3)^2 = 16$$

$$x+3 = \pm 4$$

$$x = -7, 1$$



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

A. 2

B. $65/8$

C. $37/6$

D. None of these

H.W.

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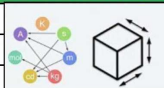
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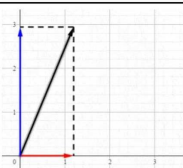
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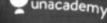


The screenshot shows a live class interface. At the top left is the 'unacademy' logo. Below it, a 'Question' header is visible. The main content area displays a chemistry problem from 'ROHIT SACHAN' asking to solve a doubt. The problem involves a reaction of an amine with $\text{HNO}_3/\text{H}_2\text{SO}_4$. Handwritten notes in red ink show the mechanism: an amine reacts with $\text{HNO}_3/\text{H}_2\text{SO}_4$ to form a nitrosonium ion (NO^+), which then attacks the nitrogen of the amine. The notes also mention 'e- deficient' and 'e- rich system'. On the right side, there is a video feed of the educator, Rohit Sachan, and a list of participants including Chaudhuri nitrATion, Rohit Sachan Sir B a a rha mera, Sinchan Dutta Chaudhuri right, Shoalb Alam Left, Vsvsgs Right, Prashant Singh joined, and Rohit Sachan Left.

The screenshot shows a test results page. At the top, there are buttons for 'View solutions' and 'Share your results'. Below these, a progress bar indicates '68 correct' and '2 incorrect' answers. The page is divided into sections for 'Physics', 'Chemistry', and 'Mathematics'. The 'Physics' section is currently selected, showing a score of 88/120 and an accuracy of 73%. At the bottom, there is a section for 'NEGATIVE MARKING' and a note 'YOU MISSED OUT'.



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


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


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


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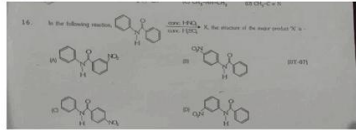
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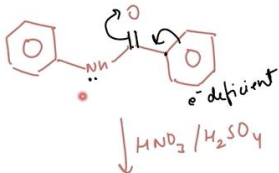



Question

ROHIT SACHAN:
Sir please solve the one more doubt...



NO_2^+
 $\text{E}^+ \rightarrow$ attacks on e^- rich system





Chaudhuri
nitration

Rohit Sachan Sir Baa rha mera

Sinchan Dutta
Chaudhuri
right

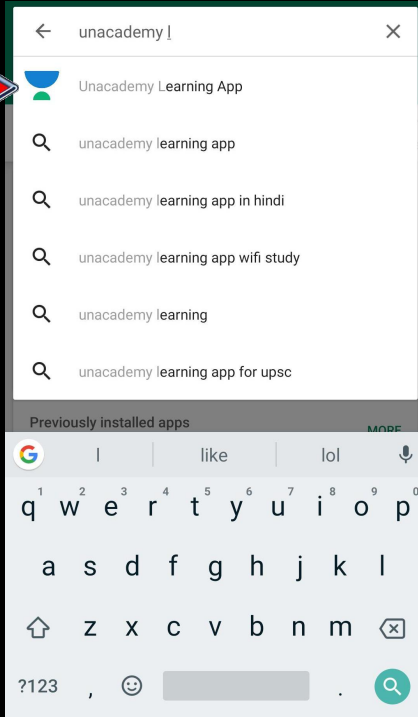
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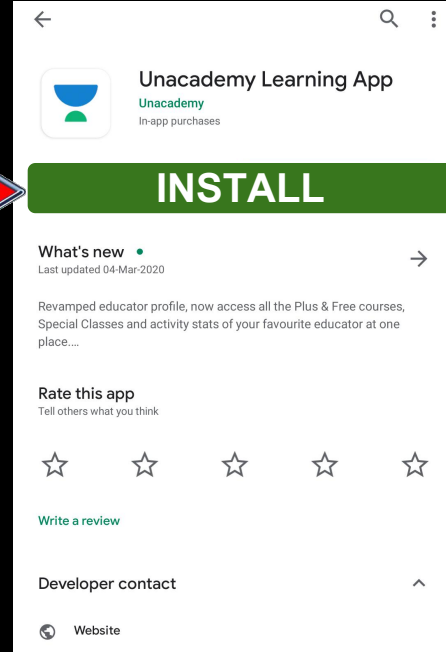
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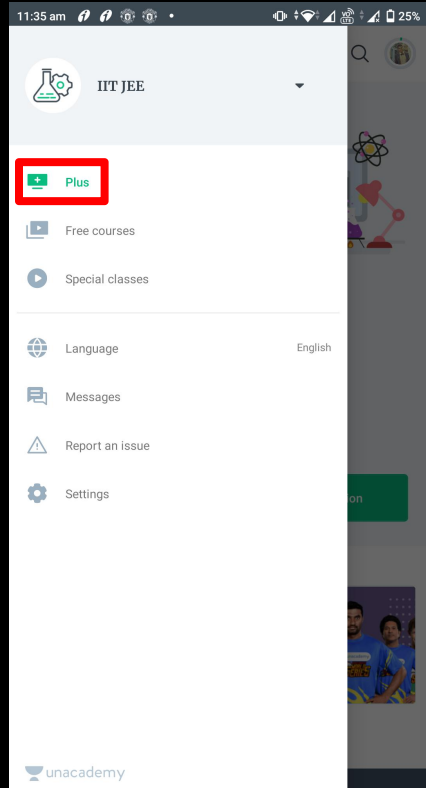
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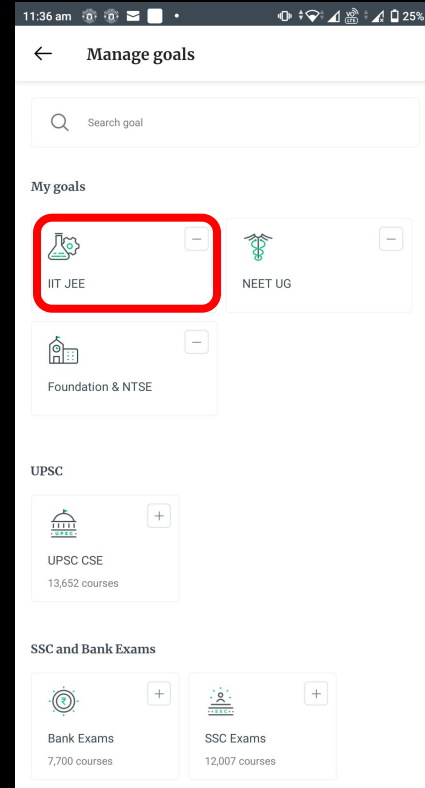
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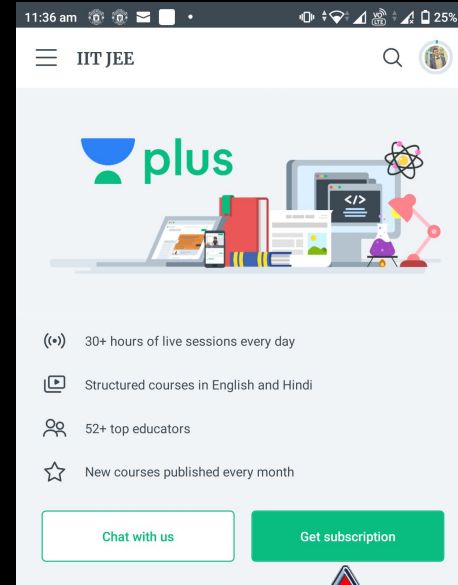
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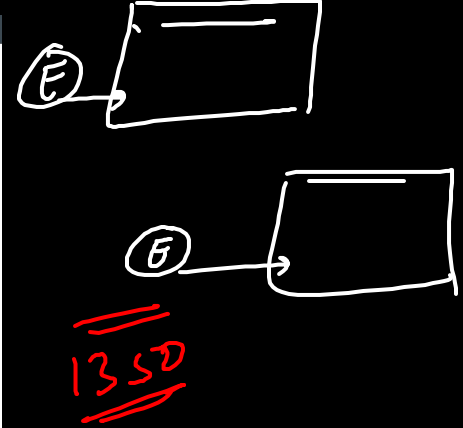
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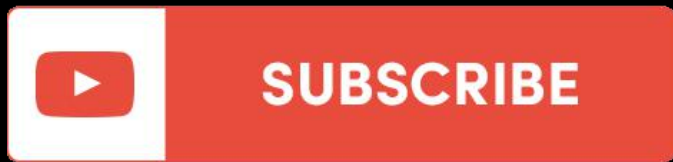
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