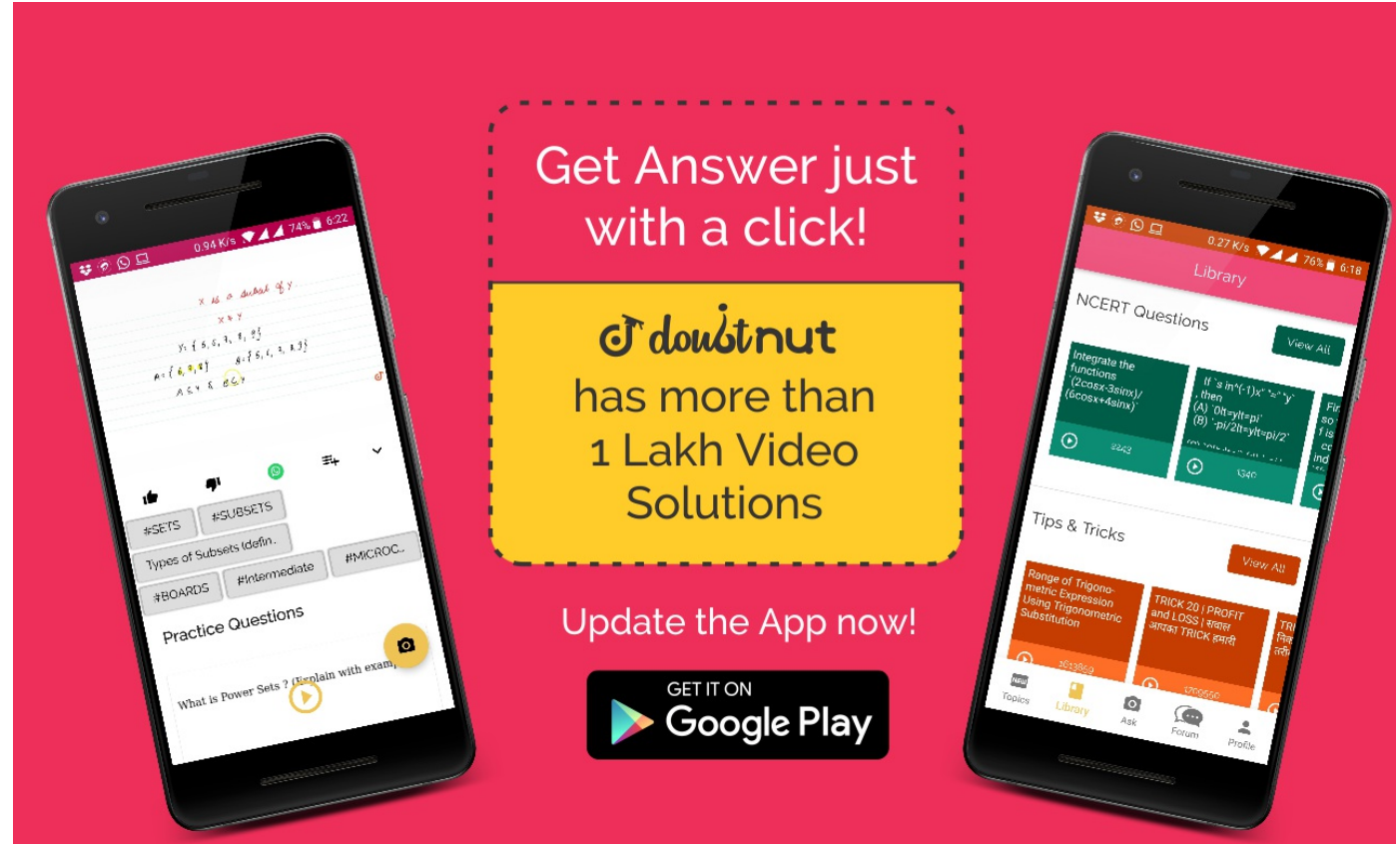


Ques No.	Question
1	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 1</p> $\left(\lim \right)_{x \rightarrow 3} x + 3$ <p>Watch Free Video Solution on Doubtnut</p>
2	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 2</p> $\left(\lim \right)_{x \rightarrow \pi} \left(x - \frac{22}{7} \right)$ <p>Watch Free Video Solution on Doubtnut</p>
3	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 3</p> $\left(\lim \right)_{r \rightarrow 1} \pi r^2$ <p>Watch Free Video Solution on Doubtnut</p>
4	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 4</p> $\left(\lim \right)_{x \rightarrow \pi} \frac{4x + 3}{x - 2}$ <p>Watch Free Video Solution on Doubtnut</p>
5	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 5</p> $\left(\lim \right)_{x \rightarrow -1} \frac{x^{10} + x^5 + 1}{x - 1}$



6

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 6

$$\lim_{x \rightarrow 0} \frac{(x + 1)^5 - 1}{x}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 7

$$\lim_{x \rightarrow \pi} \frac{3x^2 - x - 10}{x^2 - 4}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 8

$$\lim_{x \rightarrow 3} \frac{x^4 - 81}{2x^2 - 5x - 3}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 9

$$\left(\lim \right)_{x \rightarrow \pi} \frac{ax + b}{cx + 1}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 10

$$\left(\lim \right)_{z \rightarrow 1} \frac{z^{\frac{1}{3}} - 1}{z^{\frac{1}{6}} - 1}$$

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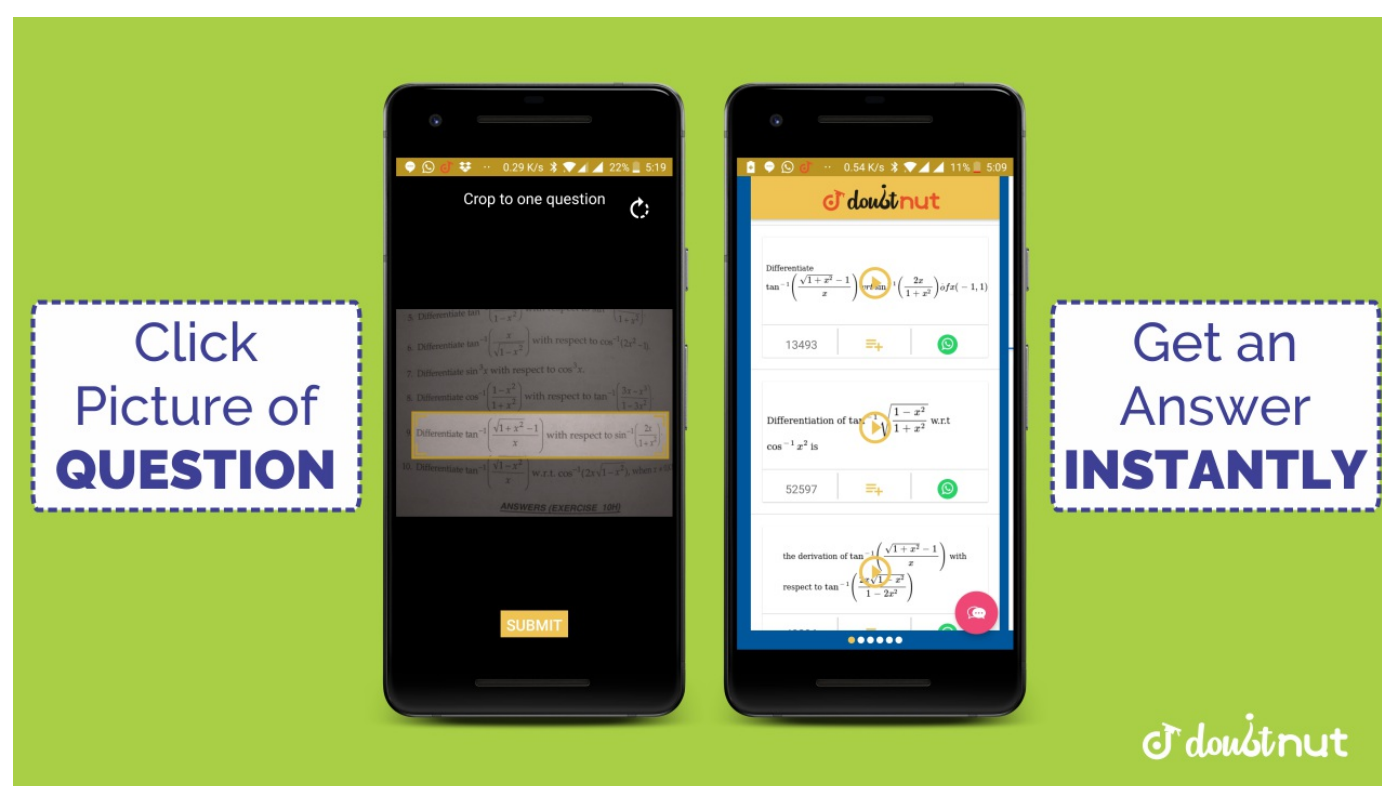
NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 11

$$\lim_{x \rightarrow 1} \frac{ax^2 + bx + c}{cx^2 + bx + a},$$

$$a + b + c \neq 0$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 12

12

$$\left(\lim \right)_{x \rightarrow 2} \frac{\frac{1}{x} + \frac{1}{2}}{x + 2}$$

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$$\left(\lim \right)_{x \rightarrow 0} \frac{\sin ax}{bx}$$

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$$\left(\lim \right)_{x \rightarrow 0} \frac{\sin ax}{\sin bx} a, \\ b, \neq 0$$

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$$\left(\lim \right)_{x \rightarrow \pi} \frac{\sin(\pi - x)}{\pi(\pi - x)}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 16

$$\left(\lim \right)_{x \rightarrow 0} \frac{\cos x}{\pi - x}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 17

$$\left(\lim \right)_{x \rightarrow 0} \frac{\cos 2x - 1}{\cos x - 1}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 18

$$\left(\lim_{x \rightarrow 0} \frac{ax + x \cos x}{b \sin x} \right)$$

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$$\left(\lim_{x \rightarrow 0} x \sec x \right)$$

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$$\left(\lim_{x \rightarrow 0} \frac{\sin ax + bx}{ax + \sin bx} a, \right.$$

$$\left. b, a + b \neq 0 \right)$$

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$$\left(\lim_{x \rightarrow 0} (\cos ecx - \cot x) \right)$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 22

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\tan 2x}{x - \frac{\pi}{2}}$$

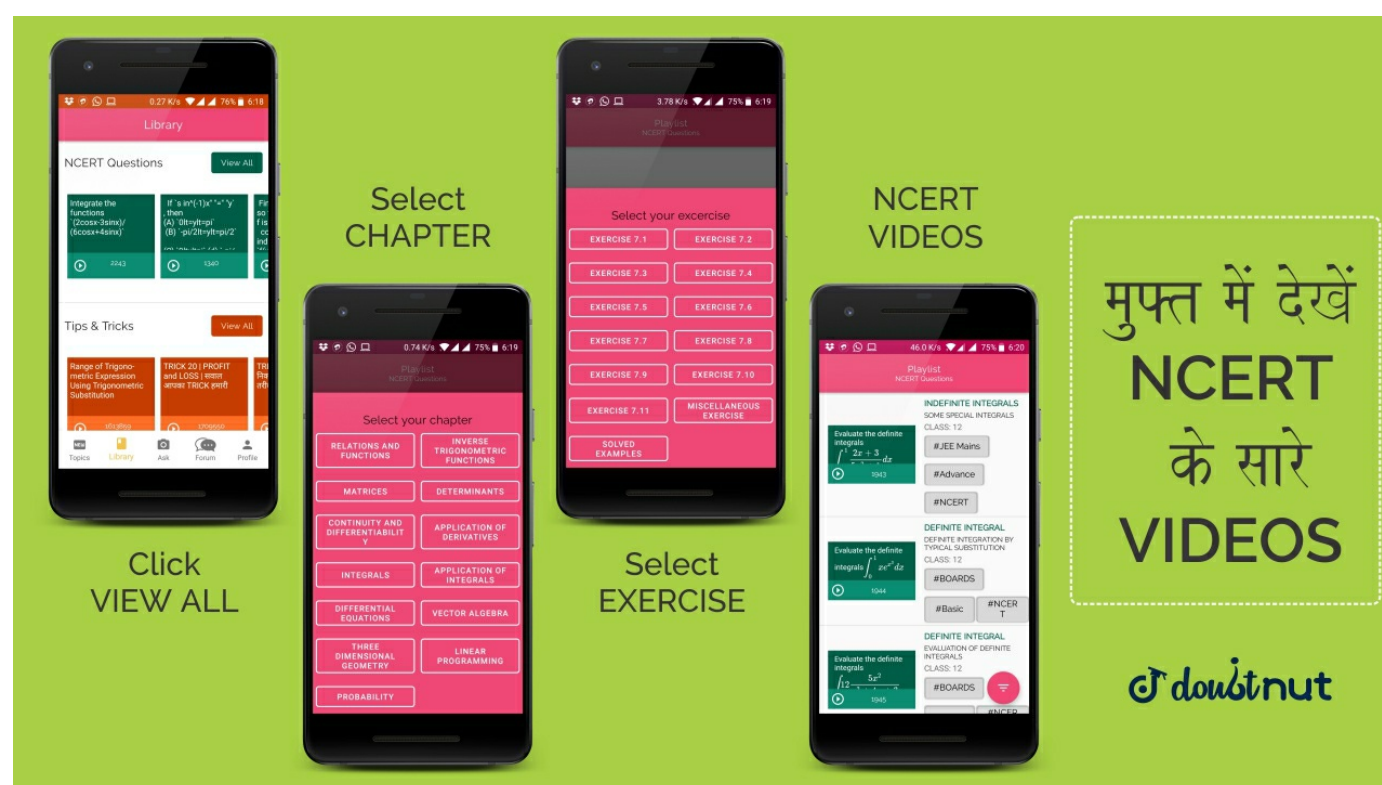
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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 23

Find
 $\lim_{x \rightarrow 0} f(x)$ and
 $\lim_{x \rightarrow 1} f(x)$,
 where $f(x)$
 $= [2x + 3, x$
 $\leq 0]$ and $[3(x + 1), x > 0]$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 24

Find

$$(\lim)_{x \rightarrow 1} f(x),$$

where $f(x)$

$$= \begin{cases} x^2 - 1, & x \leq 1 \\ -x^2 - 1, & x > 1 \end{cases}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 25

Evaluate $(\lim)_{x \rightarrow 0} f(x)$, where

$$f(x) = \begin{cases} \frac{|x|}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 26

Find $(\lim)_{x \rightarrow 0} f(x)$, where

$$f(x) = \begin{cases} \frac{x}{|x|}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 27

Find $(\lim)_{x \rightarrow 5} f(x)$, where $f(x) = |x| - 5$

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Suppose

$$f(x) = \begin{cases} a + bx, & x < 1 \\ b - ax, & x > 1 \end{cases}$$

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Let a_1, a_2, \dots, a_n be fixed real numbers and define a function $(x - a_2) \dots (x - a_n)$. What is $(\lim)_{x \rightarrow x_1} (x)$? For some $a \neq a_1, a_2, \dots, a_n$, compute $(\lim)_{x \rightarrow a} f(x)$

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If $f(x) = \begin{cases} |x| + 1, & x < 0 \\ 0, & x = 0 \\ |x| - 1, & x > 0 \end{cases}$

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If the function $f(x)$ satisfies $(\lim)_{x \rightarrow 1} \frac{f(x) - 2}{x^2 - 1} = \pi$, evaluate $(\lim)_{x \rightarrow 1} f(x)$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.1 - Q 32

If $f(x) = \begin{cases} mx^2 + n, & x < 0 \\ nx + m, & 0 < x < 1 \\ nx^3 + m, & x > 1 \end{cases}$. For what integers m and n does both $(\lim)_{x \rightarrow 1} f(x)$.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 1

Find the derivative of $x^2 - 2$ at $x = 10$.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 2

Find the derivative of $99x$ at $x = 100$.

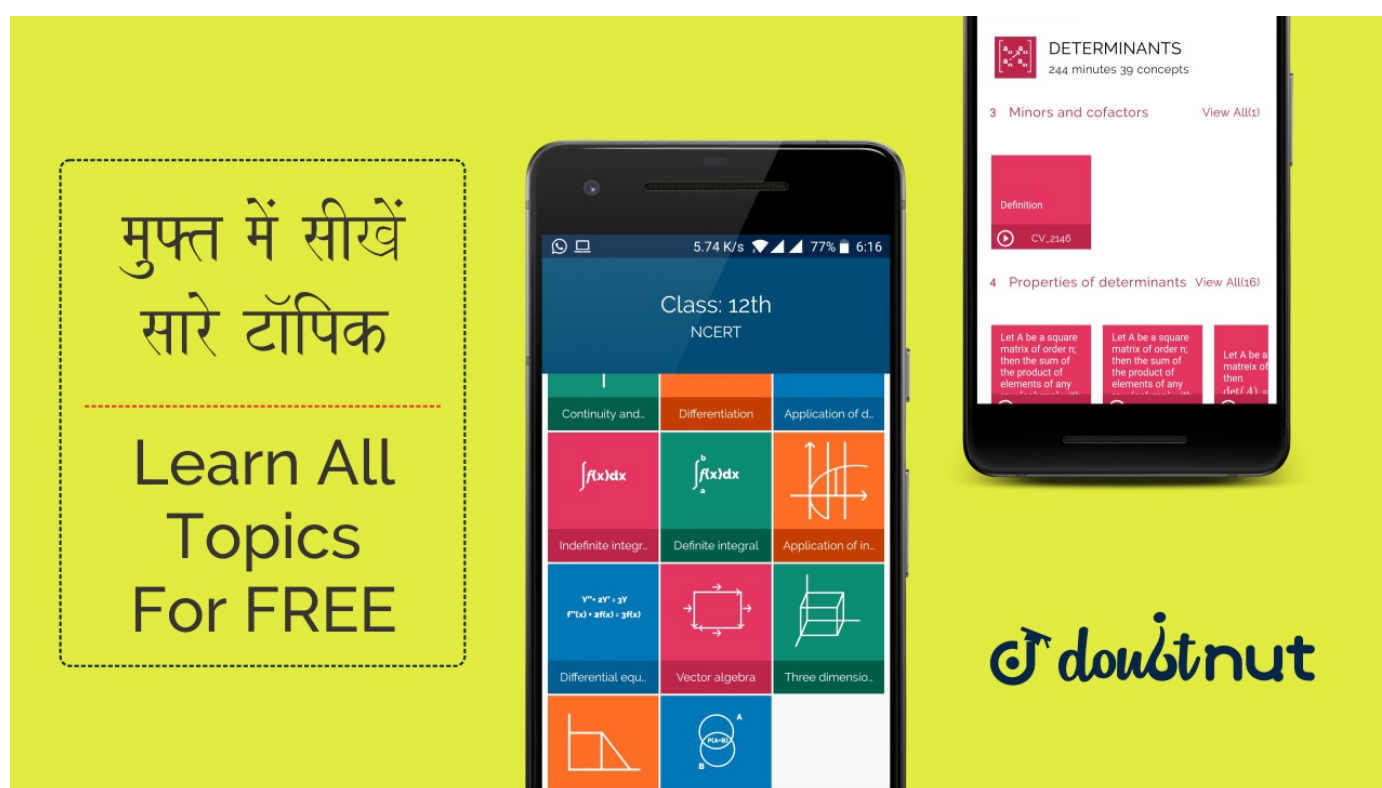
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Find the derivative of x at $x = 1$.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 4

Find the derivative of the following functions from first principle. (i) $x^3 - 27$ (ii) $(x - 1)$
(iii) $\frac{1}{x^2}$ (iv) $\frac{x + 1}{x - 1}$

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For the function

$$f(x) = \frac{x^{100}}{100}$$

$$+ \frac{x^{99}}{99} + \dots + \frac{x^2}{2}$$

$$+ x + 1.$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 6

Find the derivative of

$$x^n + ax^{n-1} + a^2x^{n-2} + \dots + a^{n-1}x + a^n$$

for some fixed real number a.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 7

For some constants a and b, find the derivative of (i) $(x - a) \cdot (x - b)$ (ii) $(ax^2 + b)^2$ (iii) $\frac{x - a}{x - b}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 8

Find the derivative of $\frac{x^n - a^n}{x - a}$ for some constant a.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 9

Find the derivative of (i) $2x - \frac{3}{4}$ (ii) $(5x^3 + 3x - 1)(x - 1)$ (iii) $x^{-3}(5 + 3x)$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 10

Find the derivative of $\cos x$ from first principle.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.2 - Q 11

Find the derivative of the following functions: (i) $\sin x$ (ii) $\sec x$ (iii)

- $\frac{5}{3} \sec x + \frac{4}{3} \cos x$
 (iv) $\operatorname{cosec} x$ (v) $\cot x$
 $\frac{5}{3} \operatorname{cosec} x + \frac{6}{7} \cos x$
 (vi) $\frac{5}{3} \sec x + \frac{6}{7} \cos x$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.3 - Q 1

Evaluate the limits, if exist $\left(\lim \right)_{x \rightarrow 0} \frac{e^{4x} - 1}{x}$

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Evaluate the limits, if exist

$$\lim_{x \rightarrow 0} \frac{e^{2+x} - e^2}{x}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.3 - Q 3

Evaluate the limits, if exist $\left(\lim_{x \rightarrow 5} \frac{e^x - e^5}{x - 5} \right)$

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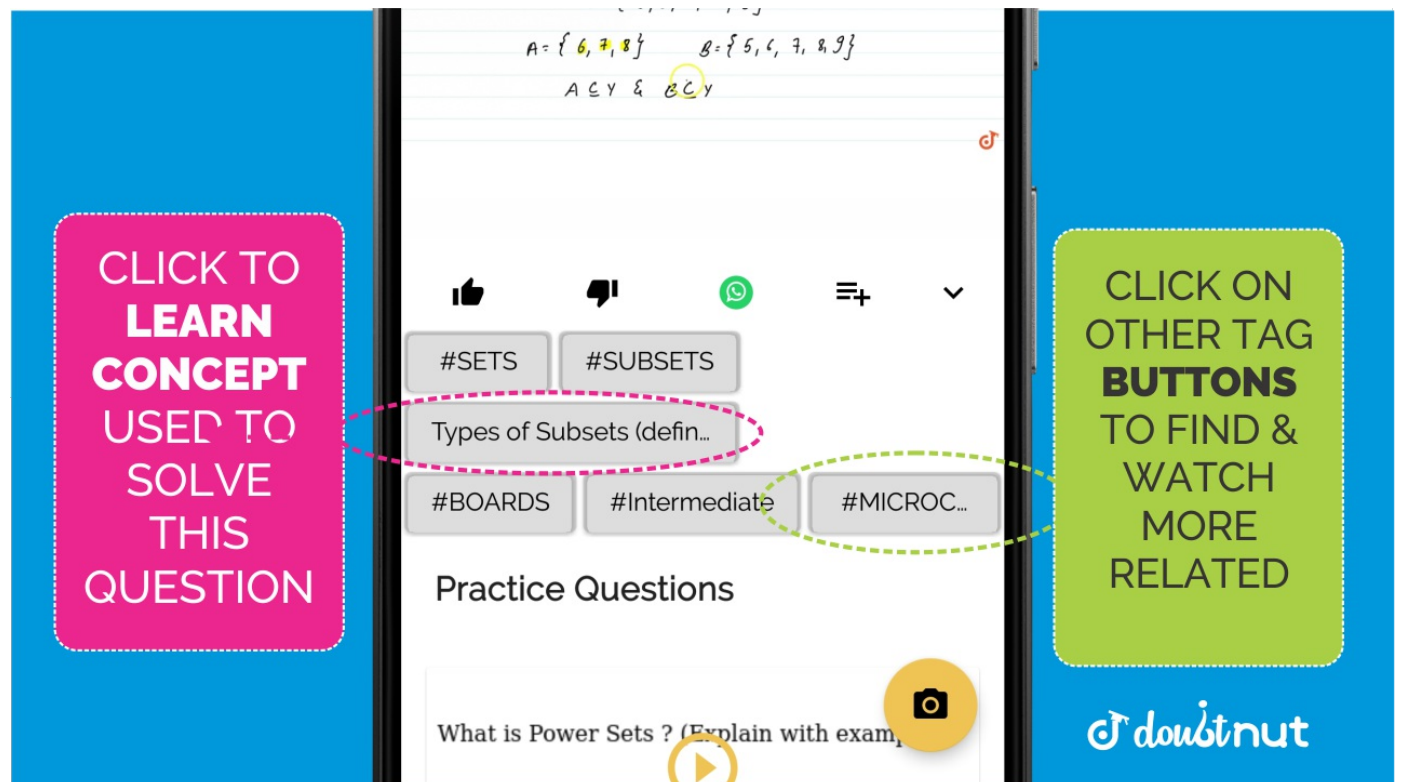
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Evaluate the limits, if exist $\left(\lim_{x \rightarrow 0} \frac{e^{\sin x} - 1}{x} \right)$

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Evaluate the limits, if exist $\lim_{x \rightarrow 3} \frac{e^x - e^3}{x - 3}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.3 - Q 6

Evaluate the limits, if exist $\lim_{x \rightarrow 0} \left(x \frac{e^x - 1}{1 - \cos x} \right)$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.3 - Q 7

Evaluate the limits, if exist $\lim_{x \rightarrow 0} \frac{\log_e(1 + 2x)}{x}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - EXERCISE 13.3 - Q 8

Evaluate the limits, if exist

$$\lim_{x \rightarrow 0} \frac{\log(1 + x^3)}{\sin^3 x}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 1

Find the derivative of the following functions from first principles: (i) x (ii) $(-x)^{-1}$ (iii) $s \in (x + 1)$ (iv) $\cos\left(x - \frac{\pi}{8}\right)$ Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s a

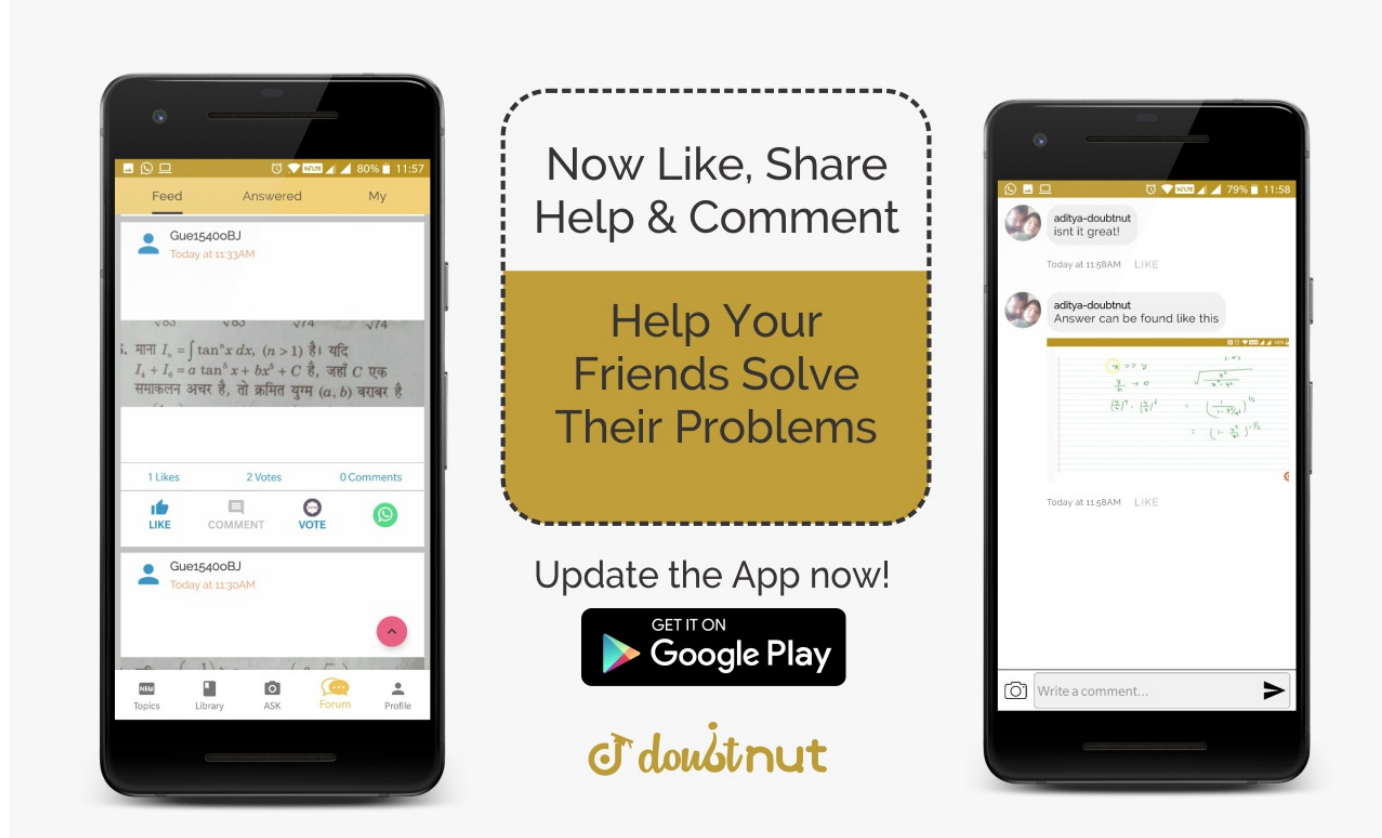
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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 2

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $(x + a)$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 3

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers):

$$(px + q)\left(\frac{r}{x} + s\right)$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 4

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers):

$$(ax + b)(cx + d)^2$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 5

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{ax + b}{cx + d}$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r

and s are fixed non-zero constants and m and n are integers):

$$\frac{1 + \frac{1}{x}}{1 - \frac{1}{x}}$$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{1}{ax^2 + bx + c}$

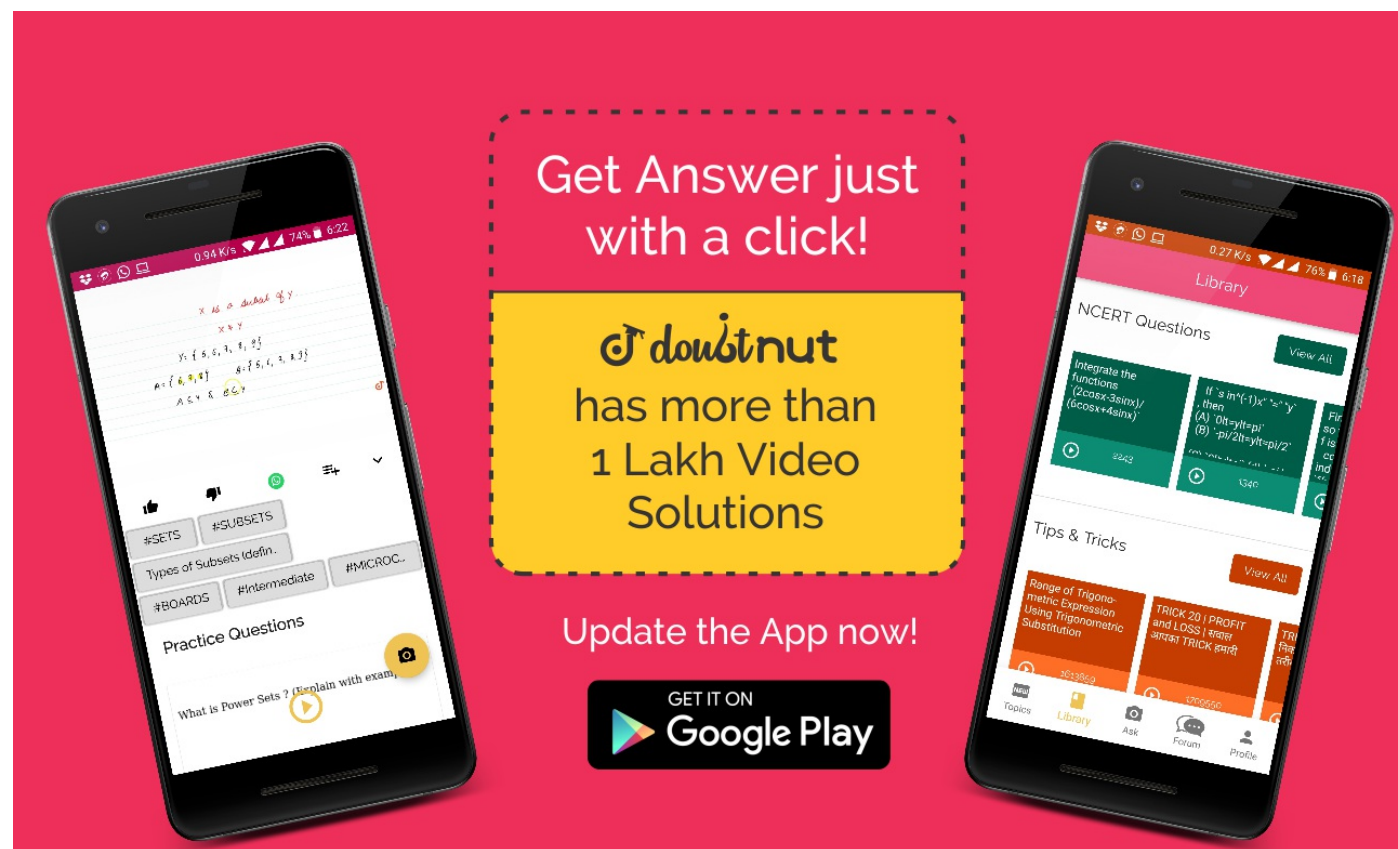
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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{ax + b}{px^2 + qx + r}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 9

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{px^2 + qx + r}{ax + b}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 10

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r

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and s are fixed non-zero constants and m and n are integers): $\frac{a}{x^4} - \frac{b}{x^2} + \cos x$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $4\sqrt{x} - 2$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $(ax + b)^n$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $(ax + b)^n (cx + d)^m$

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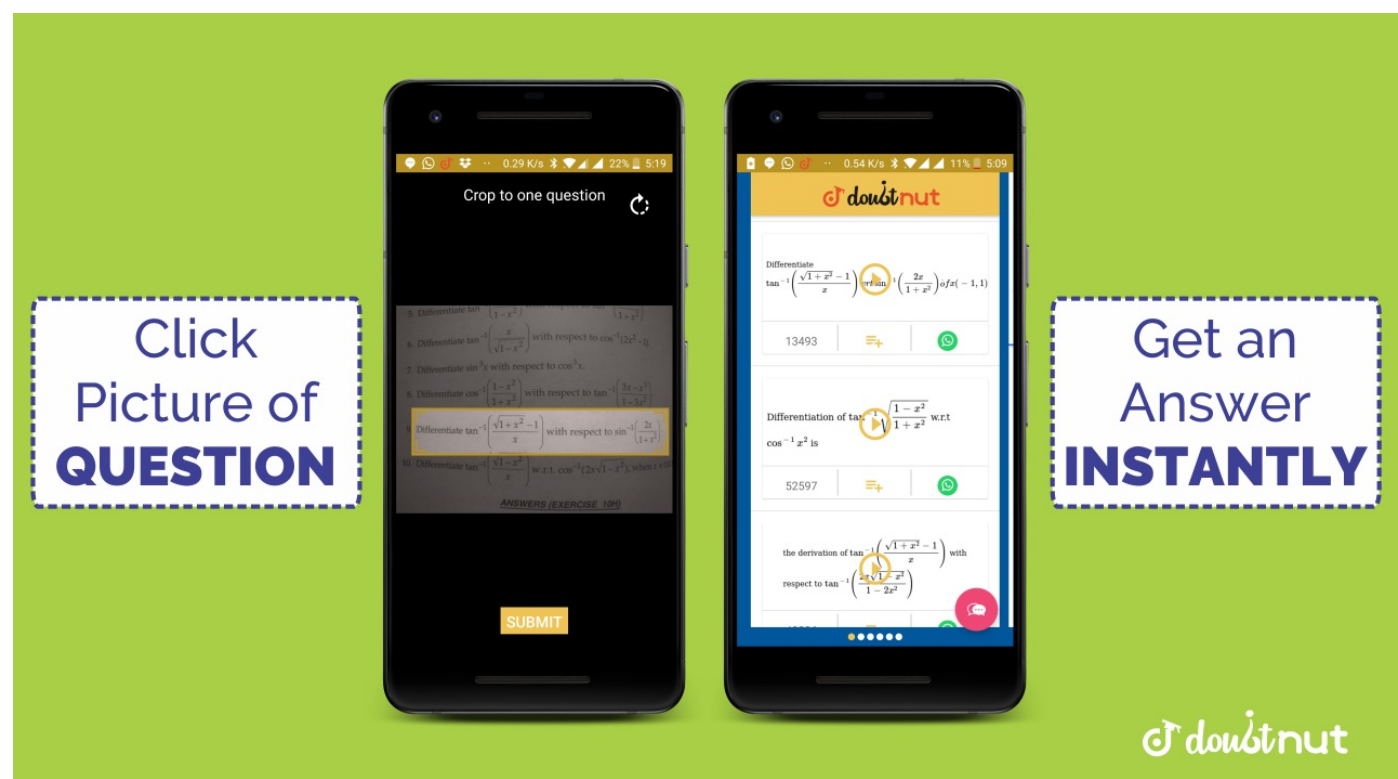
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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\sin(x + a)$

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66	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 15</p> <p>Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\operatorname{cosec} x \cot x$</p> <p>▶ Watch Free Video Solution on Doubtnut</p>
67	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 16</p> <p>Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{\cos x}{1 + \sin x}$</p> <p>▶ Watch Free Video Solution on Doubtnut</p>
68	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 17</p> <p>Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{\sin x + \cos x}{\sin x - \cos x}$</p> <p>▶ Watch Free Video Solution on Doubtnut</p>
69	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 18</p> <p>Find derivative of the following functions: $\frac{\sec x - 1}{\sec x + 1}$</p> <p>▶ Watch Free Video Solution on Doubtnut</p>
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71	<p>NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 20</p> <p>Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{a + b \sin x}{c + d \cos x}$</p> <p>▶ Watch Free Video Solution on Doubtnut</p>



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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 21

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{\sin(x + a)}{\cos x}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 22

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $x^4(5 \sin x - 3 \cos x)$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 23

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $(x^2 + 1) \cos x$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers):

$$(ax^2 + \sin x)(p + q \cos x)$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 25

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers):

$$(x + \cos x)$$

$$(x \tan x)$$

)

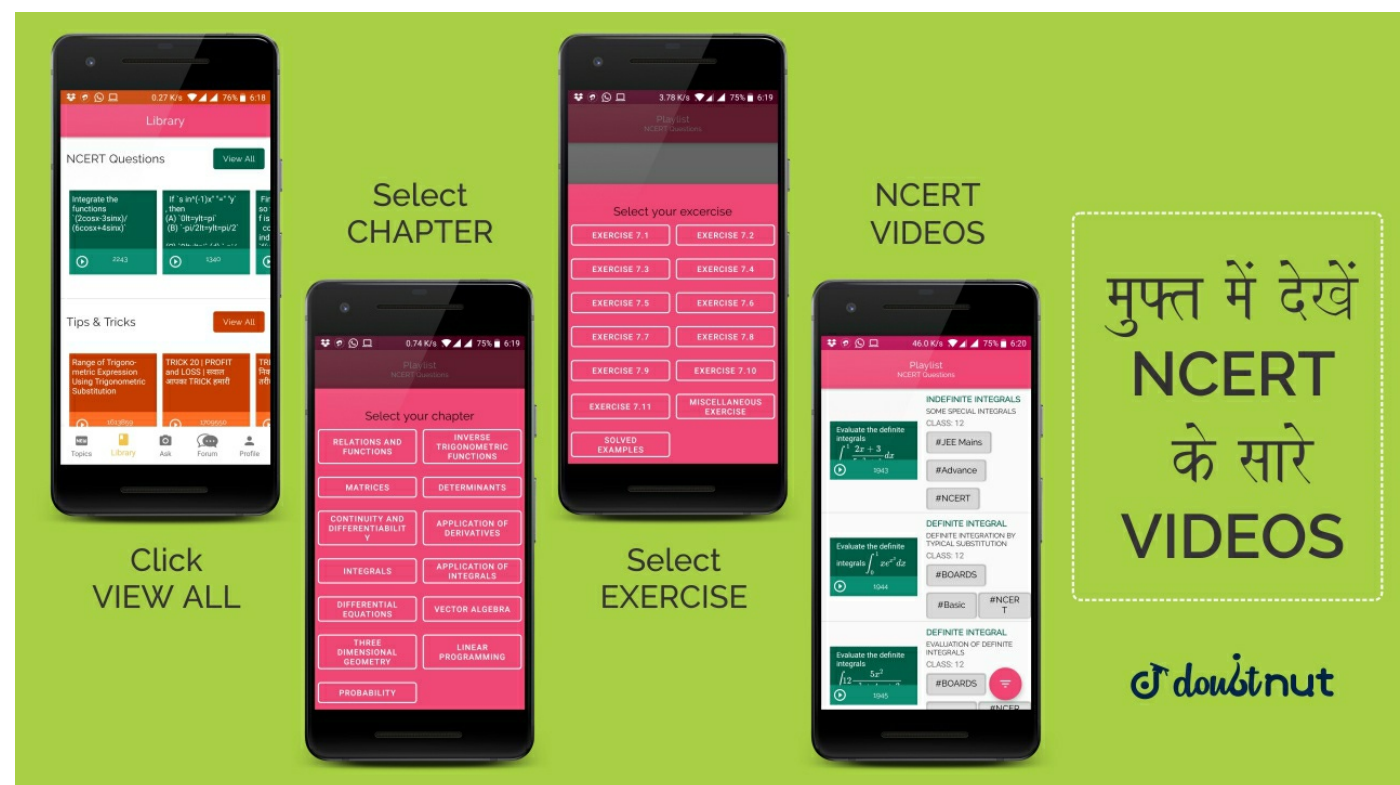
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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{4x + 5 \sin x}{3x + 7 \cos x}$

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Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers):

$$\frac{x^2 \cos\left(\frac{\pi}{4}\right)}{\sin x}$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - MISCELLANEOUS EXERCISE - Q 28

79

Find derivative of the following functions: $\frac{x}{1 + \tan x}$

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80

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers):

$$(x + \sec x)$$

$$(x \tan x)$$

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81

Find derivative of the following functions (it is to be understood that a, b, c, d, p, q, r and s are fixed non-zero constants and m and n are integers): $\frac{x}{\sin^n x}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 1

82

Find the limits: (i)

$$\left(\lim \right)_{x \rightarrow 1} [x^3 - x^2 + 1]$$

$$(iii) \left(\lim \right)_{x \rightarrow 3} [x(x + 1)] \quad (iii)$$

$$\left(\lim \right)_{x \rightarrow 1} [1 + x + x^2 + \dots + x^{10}]$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 2

83

Find the limits (i)

$$\left(\lim \right)_{x \rightarrow 1} \left[\frac{x^2 + 1}{x + 100} \right]$$

(ii)

$$\lim_{x \rightarrow 2} \left[\frac{x^3 - 4x^2 + 4x}{x^2 - 4} \right]$$

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Evaluate (i) $\lim_{x \rightarrow 1} \frac{x^{15} - 1}{x^{10} - 1}$ (ii)

$$\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - 1}{x}$$

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85

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 4

Evaluate (i) $\lim_{x \rightarrow 0} \frac{\sin 4x}{\sin 2x}$ (ii) $\lim_{x \rightarrow 0} \frac{\tan x}{x}$

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86

Find the derivative at $x = 2$ of the function $f(x) = 3x$.[▶ Watch Free Video Solution on Doubtnut](#)

87

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 6

Find the derivative of the function

$$f(x) = 2x^2 + 3x$$

at $x = 5$. Also prove that

$$f'(0) + 3f'(-1)$$

$$= 0$$

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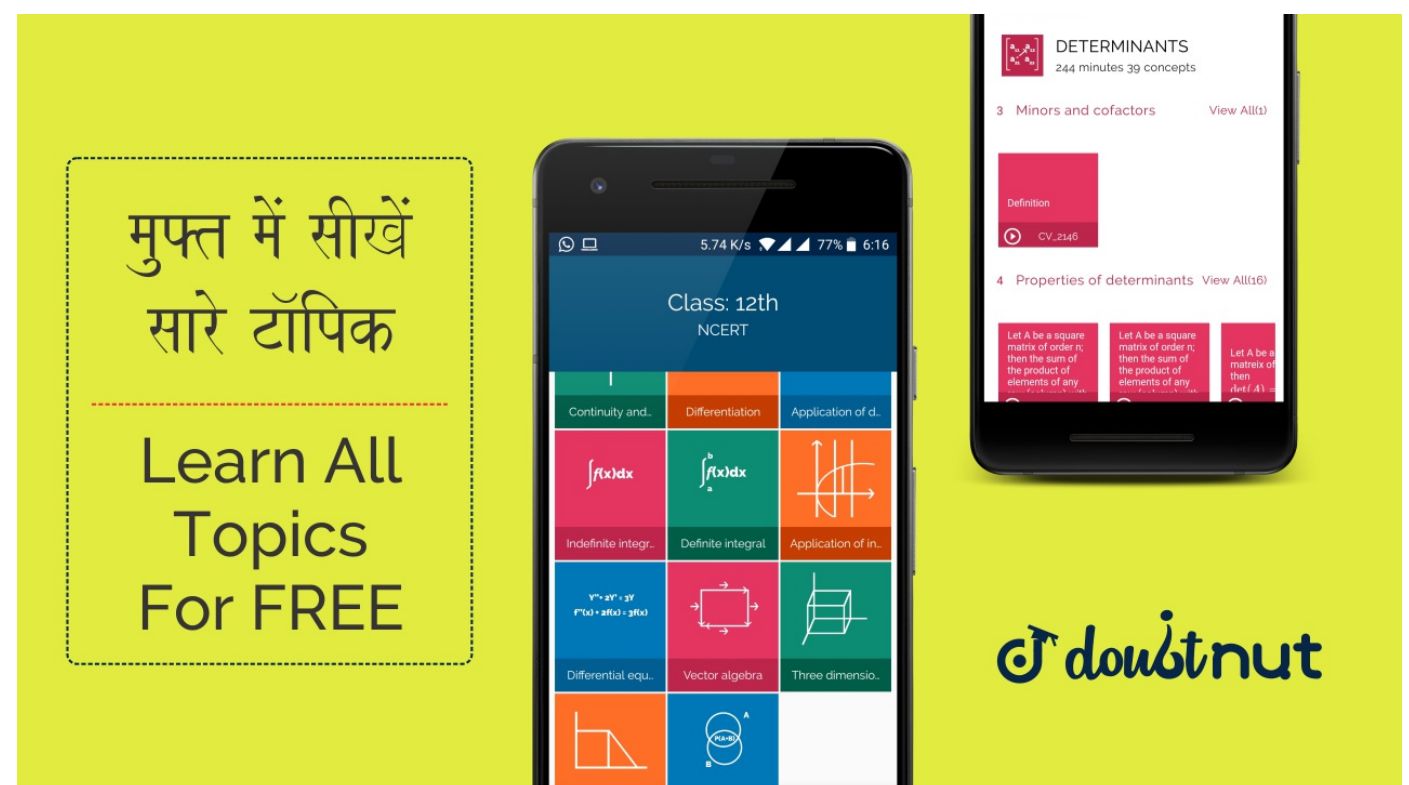
88

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 7Find the derivative of $\sin x$ at $x = 0$.[▶ Watch Free Video Solution on Doubtnut](#)

89

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 8Find the derivative of $f(x) = 3$ at $x = 0$ and at $x = 3$.[▶ Watch Free Video Solution on Doubtnut](#)

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 $y'' + ay' + by = c$ $f(x) = a(x) + b(x)$ $f(x) = a(x) + b(x)$
Differential equ. Vector algebra Three dimensio.


DETERMINANTS
244 minutes 39 concepts

3 Minors and cofactors View All(1)

Definition
CV_21u6

4 Properties of determinants View All(6)

Let A be a square matrix of order n, then the sum of the product of elements of any...
Let A be a square matrix of order n, then the sum of the product of elements of any...
Let A be a square matrix of order n, then the sum of the product of elements of any...



90

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 9Find the derivative of $f(x) = 10x$.[▶ Watch Free Video Solution on Doubtnut](#)

91

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 10Find the derivative of $f(x) = x^2$ [▶ Watch Free Video Solution on Doubtnut](#)

92

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 11Find the derivative of the constant function $f(x) = a$ for a fixed real number a .[▶ Watch Free Video Solution on Doubtnut](#)

93

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 12Find the derivative of $f(x) = \frac{1}{x}$ [▶ Watch Free Video Solution on Doubtnut](#)

94

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 13Compute the derivative of $6x^{100} - x^{55} + x$.[▶ Watch Free Video Solution on Doubtnut](#)

95

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 14Find the derivative of $f(x) = 1 + x$ $+ x^2 + x^3 + \dots + x^{50}$
at $x = 1$.[▶ Watch Free Video Solution on Doubtnut](#)



96

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 15

Find the derivative of $f(x) = \frac{x+1}{x}$.

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97

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 16

Compute the derivative of $\sin x$.

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98

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 17

Compute the derivative of $\tan x$.

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 18

Compute the derivative of $f(x) = \sin^2 x$.

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100

NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 19

Find the derivative of f from the first principles, where f is given by (i) $f(x) = \frac{2x+3}{x-2}$ (ii) $f(x) = x + \frac{1}{x}$

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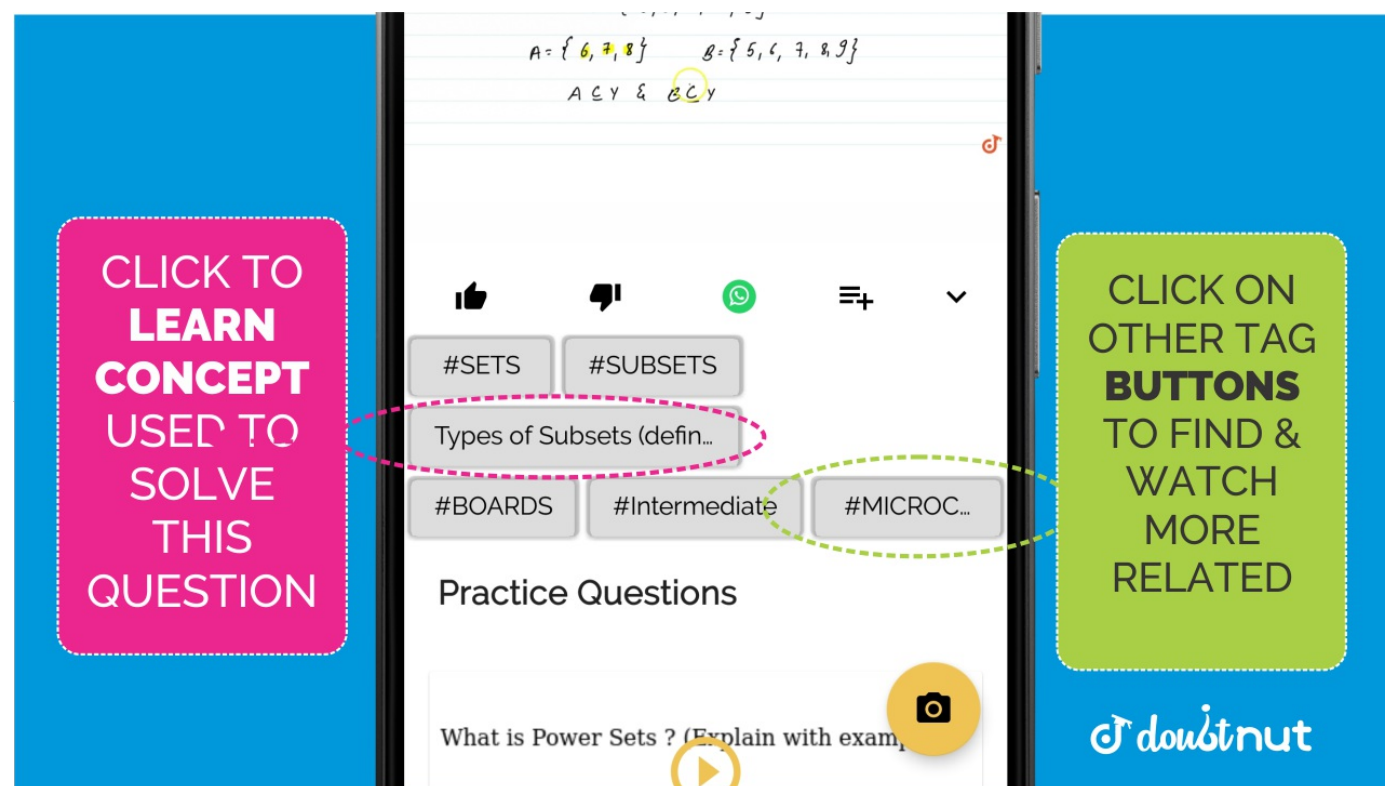
101

Find the derivative of $f(x)$ from the first principles, where $f(x)$ is (i)

$$f(x) = \sin x$$

(ii) $f(x) = \cos x$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 21

102

Compute derivative of (i)

$$f(x) = \sin 2x$$

$$= \cos 2x \cdot 2 = 2 \cos 2x$$

(ii) $g(x) = \cot x$

$$= -\operatorname{cosec}^2 x$$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 22

103

Find the derivative of (i) $\frac{x^5 - \cos x}{\sin x}$ (ii) $\frac{x + \cos x}{\tan x}$

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NCERT - CLASS 11 - CHAPTER 13 LIMITS AND DERIVATIVES - SOLVED EXAMPLES - Q 23

104

Compute $\lim_{x \rightarrow 0} \frac{e^{3x} - 1}{x}$

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105

Compute $\lim_{x \rightarrow 0} \frac{e^{3x} - \sin x - 1}{x}$

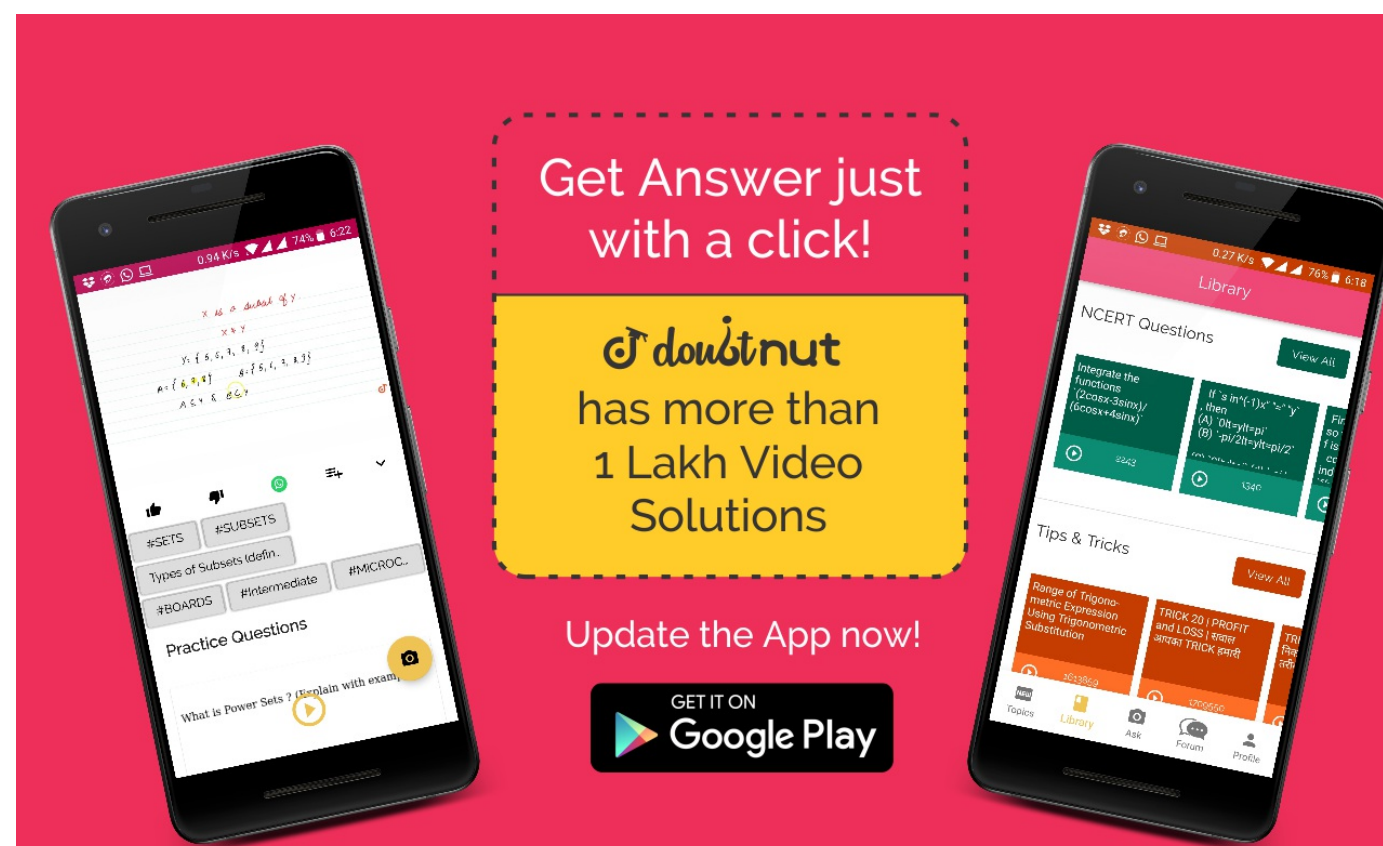
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106

Evaluate $(\lim_{x \rightarrow 0}) \frac{(\log)_e x}{x - 1}$

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