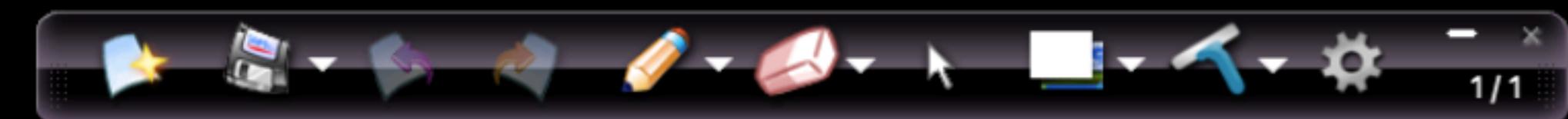


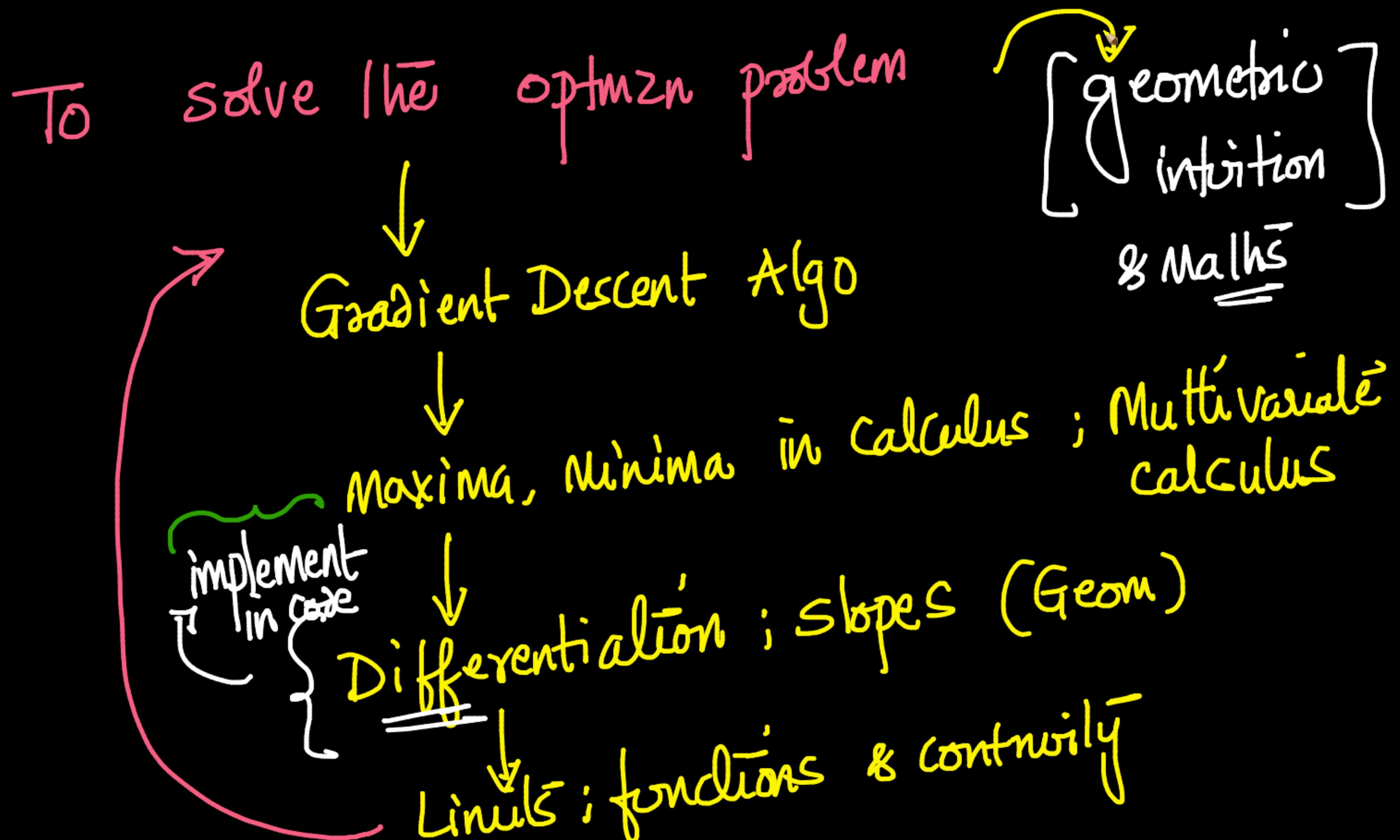
Previous



Previously
Fish sorting (Binary classfn) → Find a good Sep \overline{TA}
 w, w_0

Optimzn problem:

$$\max_{w, w_0} \sum_{i=1}^n y_i \frac{(w^T x_i + w_0)}{\|w\|}$$



Live | DSML Advanced : Ca x New Tab x | Google Search x | derivative_class.ipynb - Colab x +

scaler.com/meetings/i/dsml-advanced-calculus-2/live

Code:

what aspects you are struggling with?

inbuilt functions → google search

You are sharing your screen now

Stop Sharing

{ Logic → recommend

Srikanth Varma Chekuri (You) (Screen)

00:11:14

GEOMRTT

Rishav Kumar

Chat

Notify me about Nothing

Pin a message

okay it seems like my side issue

Rishav Kumar To: Everyone 9:07 pm @Srikanth kindly use these equation in python code, while using them in coding i struggle a lot

Rishav Kumar To: Everyone 9:08 pm yes

Rishav Kumar To: Everyone 9:09 pm kindly unmute me it more subjective

New

Rishav Kumar To: Everyone 9:09 pm thank you

Start Doubt Session Yes No

To: Everyone Enable/Disable Chat

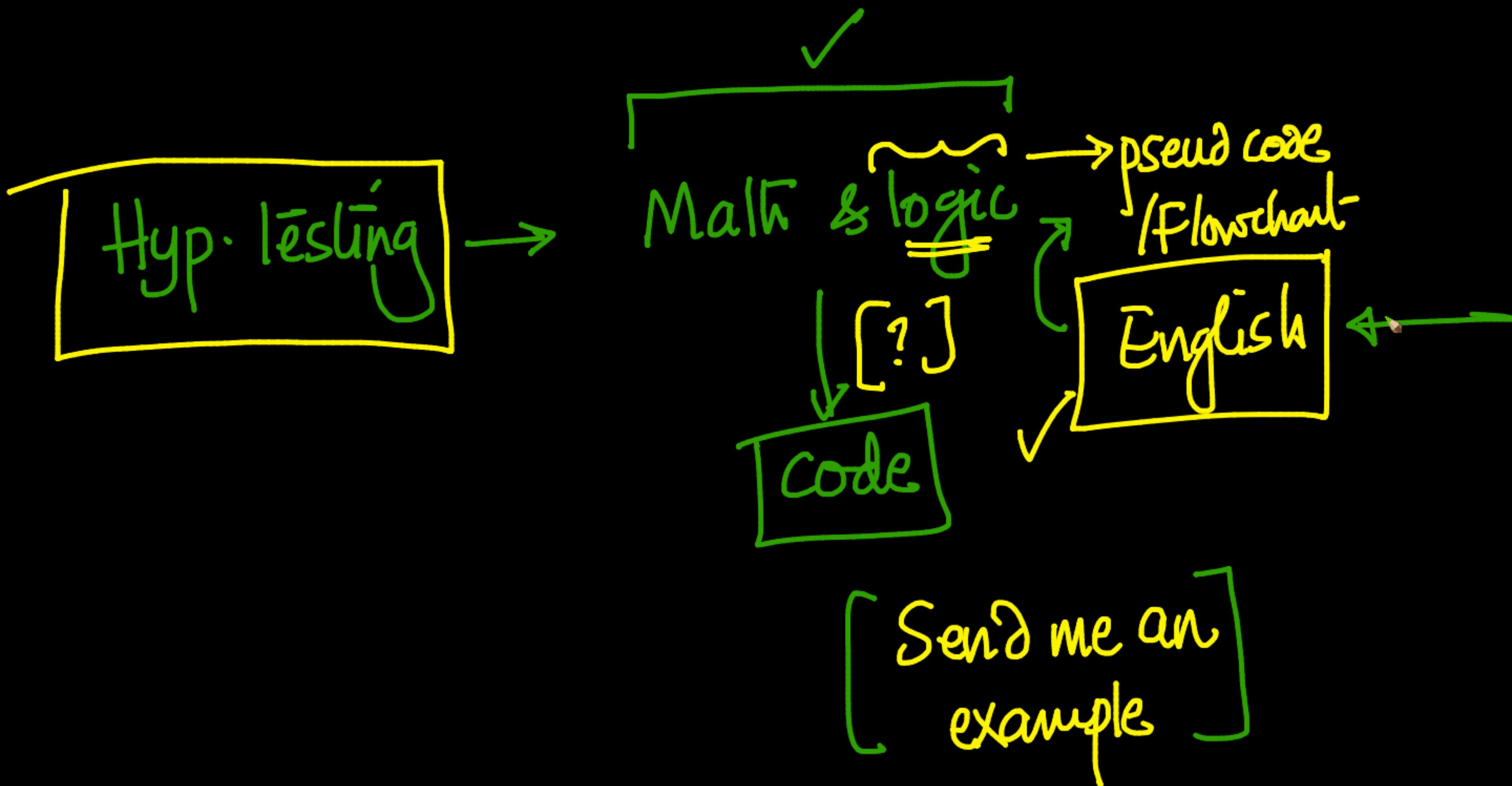
Type message

36 People

Chat

Questions

4/5



~~OPS:~~

@ end of each topic
↳ chat window

off topic ques / Audio / general

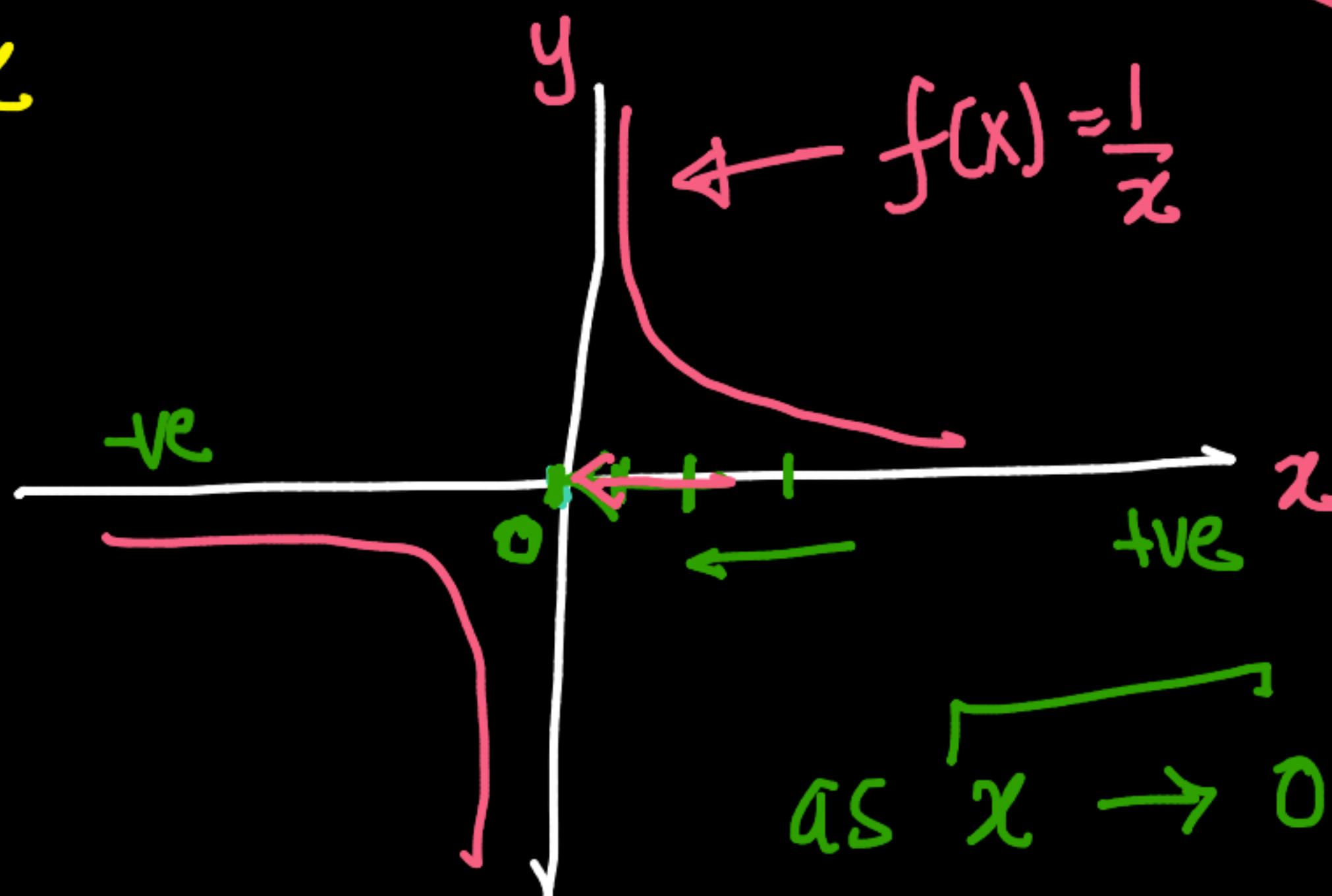
↳ end of the session

Notation: $\lim_{x \rightarrow 0^+} \frac{1}{x} = +\infty$

Functions & limits
[ML]

$$f(x) = \frac{1}{x}$$

limit of $f(x)$
@ $x=0$



as $x \rightarrow 0$ from the +ve side
 $f(x) \rightarrow +\infty$

$$x=0.01$$

$$\downarrow \frac{1}{x} = 100$$

$$x=0.0001$$

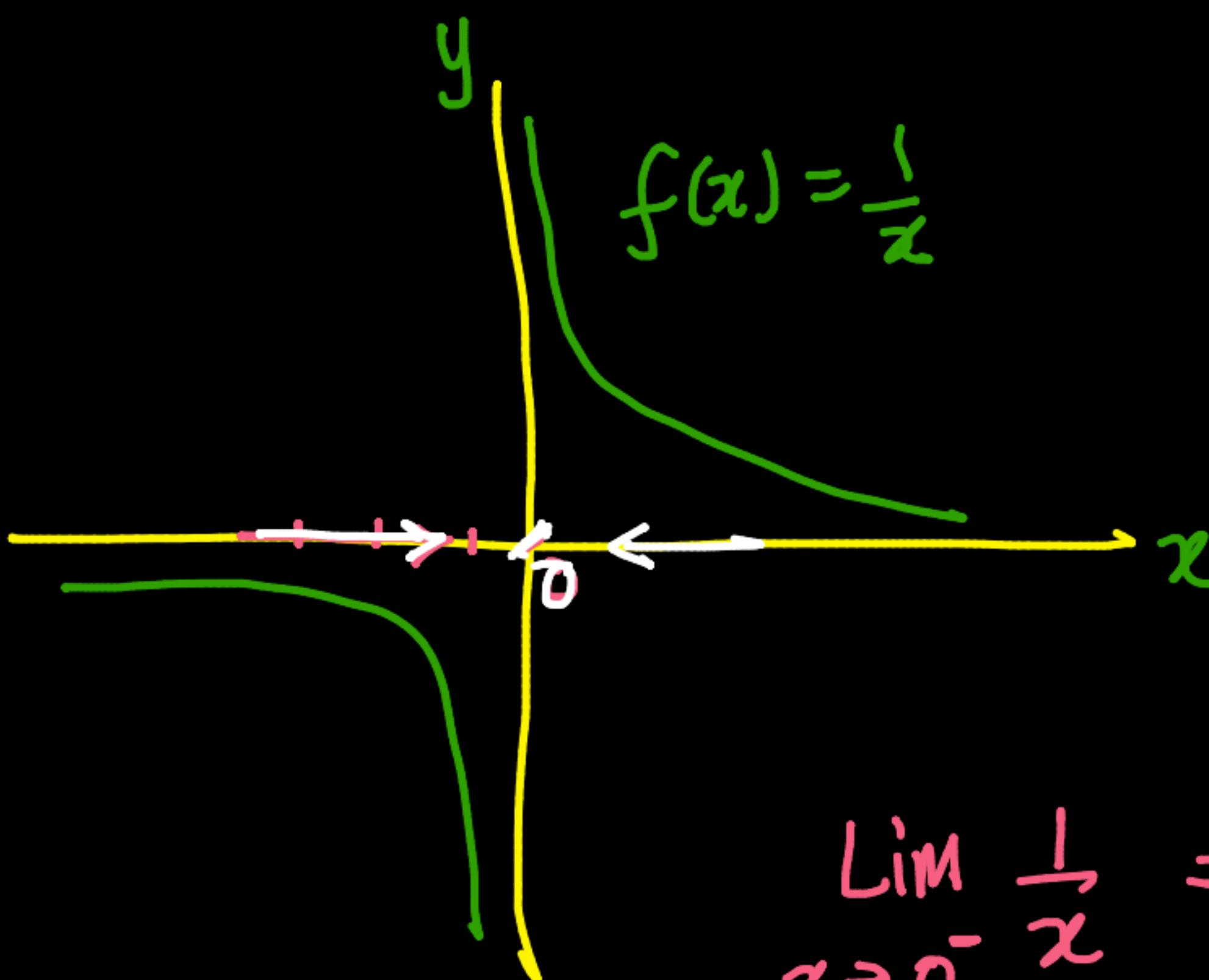
$$\downarrow \frac{1}{x} = 1000$$

$$x=10$$

$$\downarrow \frac{1}{x} = 10^{-n}$$

↓

⋮



$$\left\{ \begin{array}{l} \lim_{x \rightarrow 0^+} \frac{1}{x} = +\infty \\ \lim_{x \rightarrow 0^-} \frac{1}{x} = -\infty \end{array} \right.$$

One-sided limit

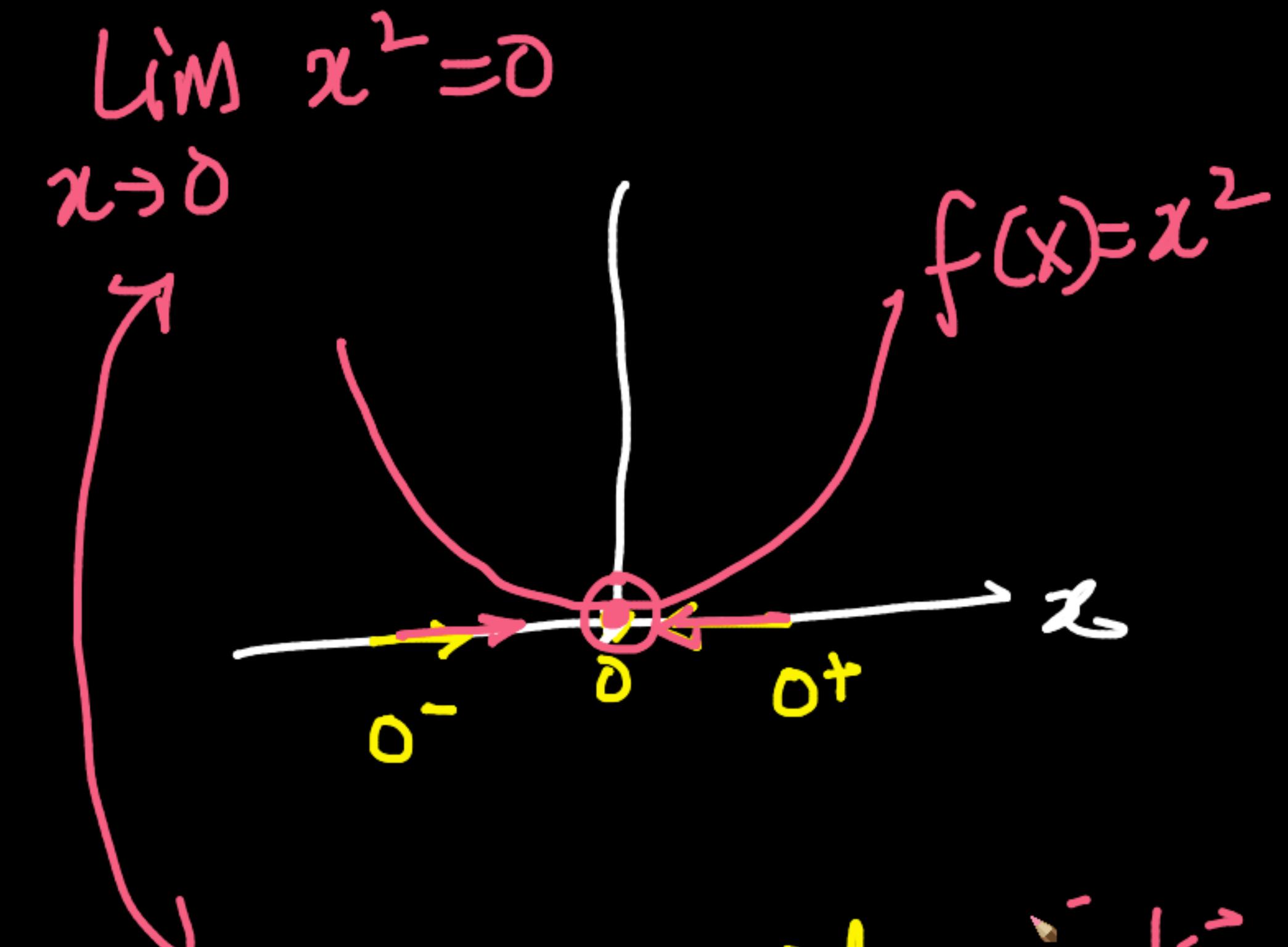
$$\lim_{x \rightarrow 0^-} \frac{1}{x} = -\infty$$

(Q)

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

(a) $\lim_{x \rightarrow 0^+} x^2 = 0$

(b) $\lim_{x \rightarrow 0^-} x^2 = 0$



2-sided limit exists

$$\lim_{x \rightarrow a^+} f(x) = \lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a} f(x)$$

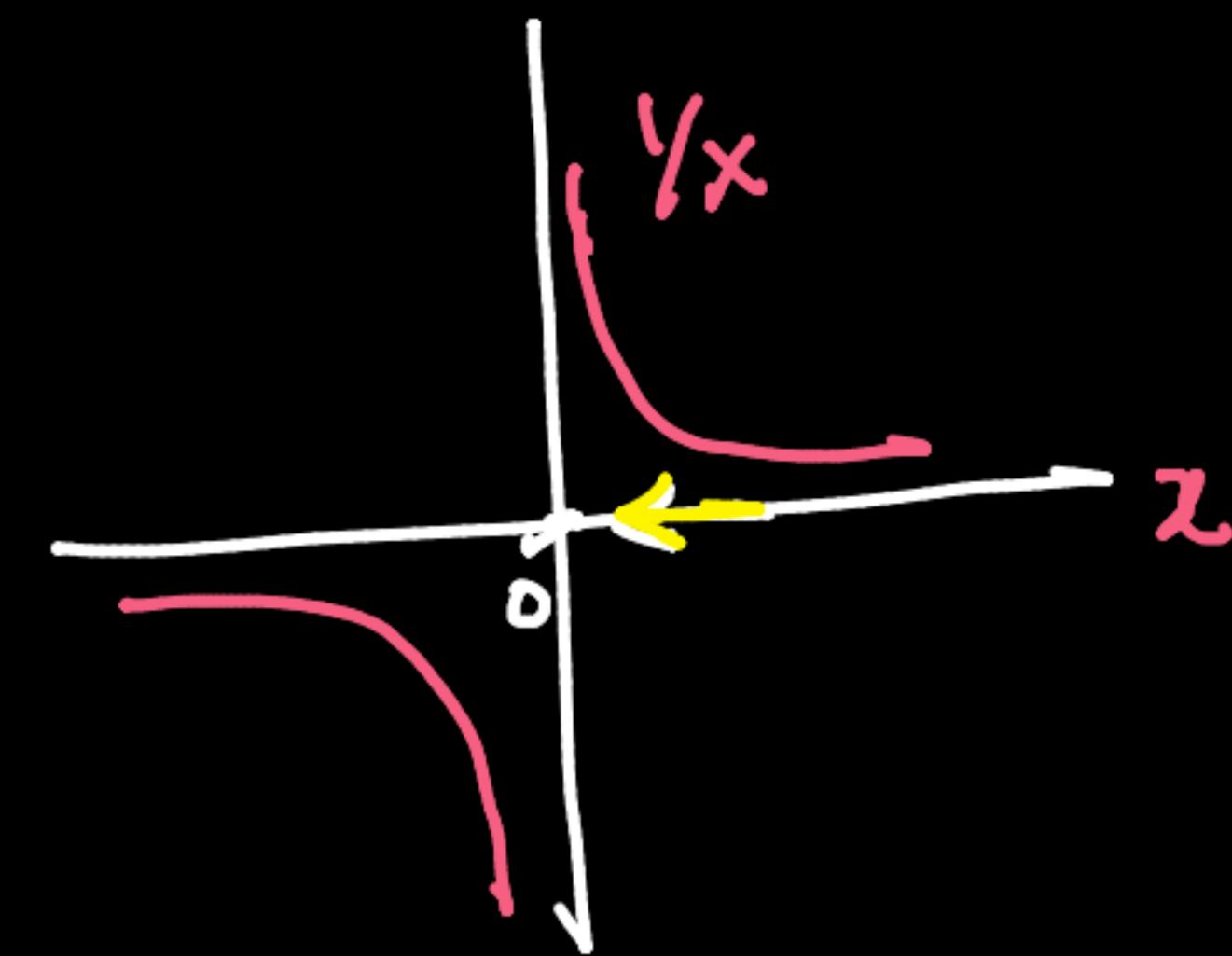
(Q) $f(x) = \frac{1}{x}$ does not exist

a) $\lim_{x \rightarrow 0} \frac{1}{x} = ?$

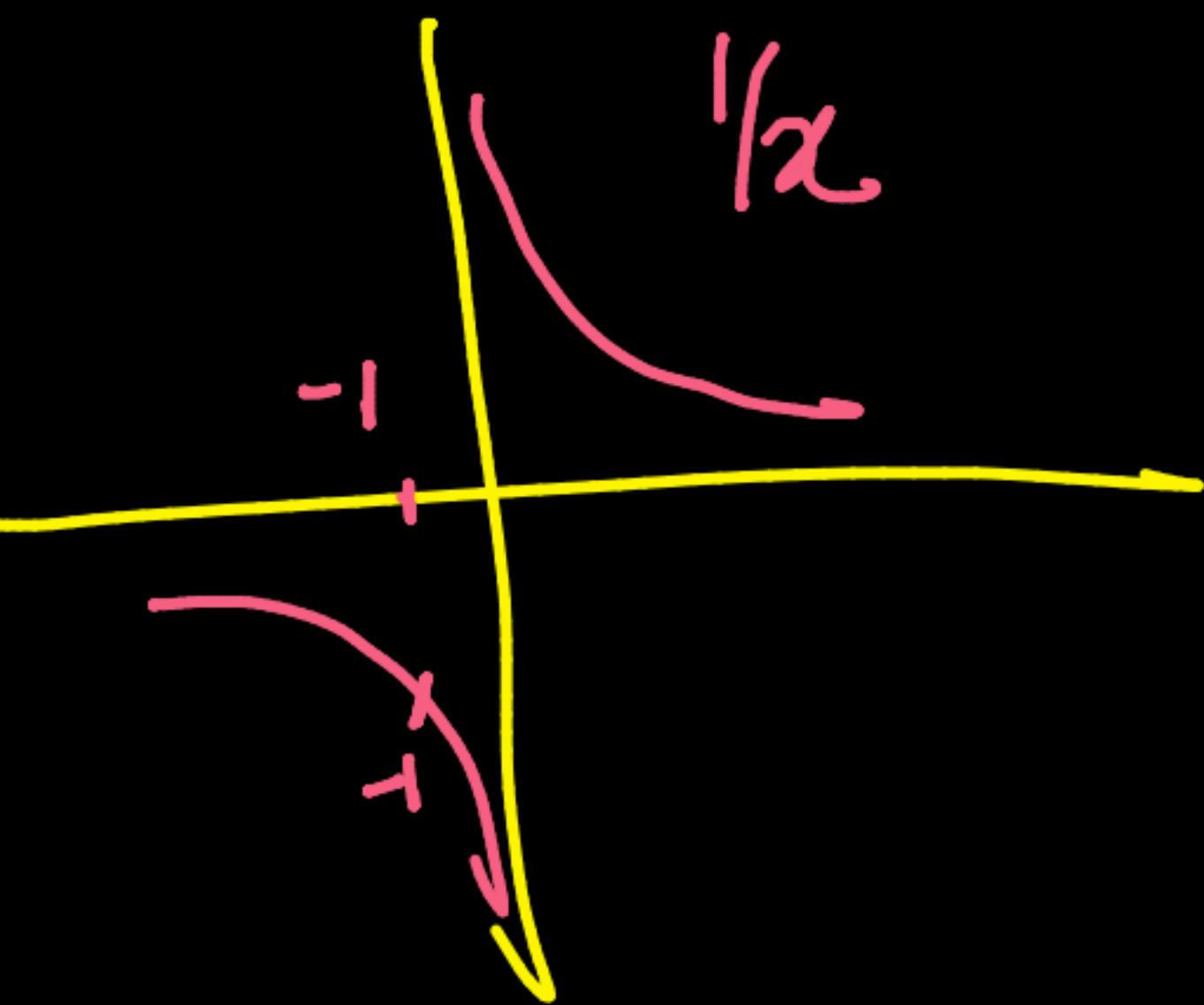
2-sided
exists

$\text{if } \lim_{x \rightarrow 0^+} \frac{1}{x} \neq \lim_{x \rightarrow 0^-} \frac{1}{x}$

then



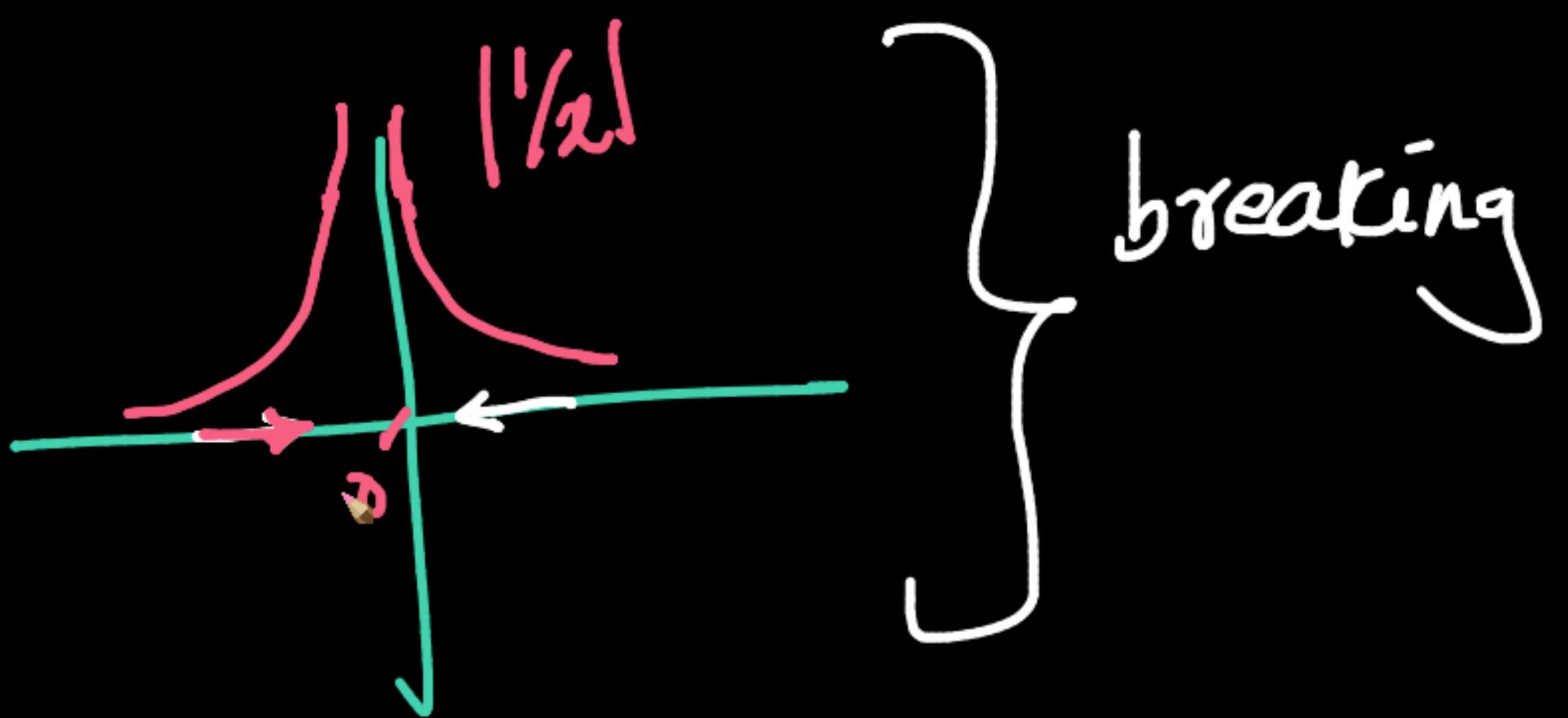
(Q) $f(x) = \left| \frac{1}{x} \right|$ abs



$$\lim_{x \rightarrow 0^+} f(x) = +\infty$$

↑

$$\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^-} f(x)$$



(Q) $f(x) = \boxed{\frac{1}{x}}$

$$\lim_{x \rightarrow 0} f(x)$$



Notation { $\lim_{x \rightarrow 1^-} f(x) = ?$ }
2-sided

$$\lim_{x \rightarrow 1^+} f(x) = 1$$

$$\lim_{x \rightarrow 1^-} f(x)$$

$$1 - 2 + 5 = 4$$

(Q)

$$f(x) = x^2 - 2x + 5$$

$$\lim_{x \rightarrow 1} f(x) = 4$$

$$x = |$$



visually
=

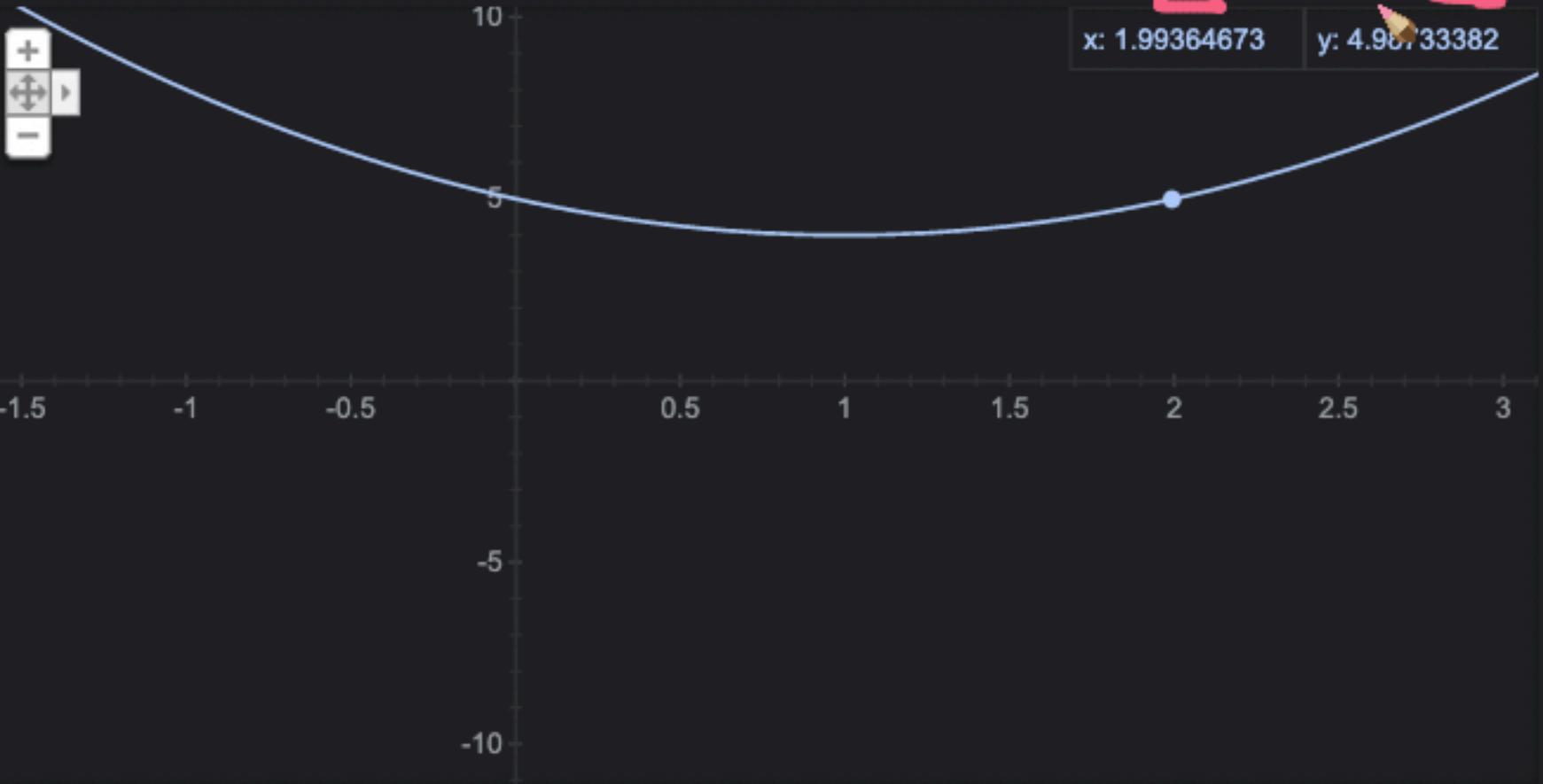
Live | DSML Advanced : Ca x | New Tab x | Google Search x | derivative_class.ipynb - Colab x | Google Search x +
← → C 🔒 google.com/search?q=plot%28x%5E2-2*x%2B5%29&rlz=1C5CHFA_enIN958IN958&ei=7-U9YofsLoWeseMP6YKRkAc&ved=0ahUKEwjHn7fuz-H2AhUFT2wGHWIBBHQ4dUDCA8&uact=5&oq=plot%28x%5E2-2*x%2B5%29&gs_lcp=... 🌐 ⬤ ☆ Update :

Google plot(x^2-2*x+5) X | ⚡ 📸 🔎

All Images Shopping News Videos More Tools

About 36,70,00,000 results (0.55 seconds)

Graph for $x^2-2*x+5$



x: 1.99364673 y: 4.98733382

More info

<https://www.wolframalpha.com> › input › i=plot+x^2+fr... ⋮

plot x^2 from $x=2$ to $x=5$ - Wolfram|Alpha

Compute answers using Wolfram's breakthrough technology & knowledgebase, relied on by millions of students & professionals. For math, science, nutrition, ...

<https://www.wolframalpha.com> › examples › mathematics ⋮

Plotting & Graphics - Wolfram|Alpha Examples

Use interactive calculators to **plot** and **graph** functions. Try 3D **plots**, equations, inequalities, polar and parametric **plots**. Specify ranges for variables.

<https://www.mathway.com> › popular-problems › Algebra ⋮

Graph $x=2$ | Mathway

15 / 15

(Q) $f(x, y) = x^2 + y^2 - 5$

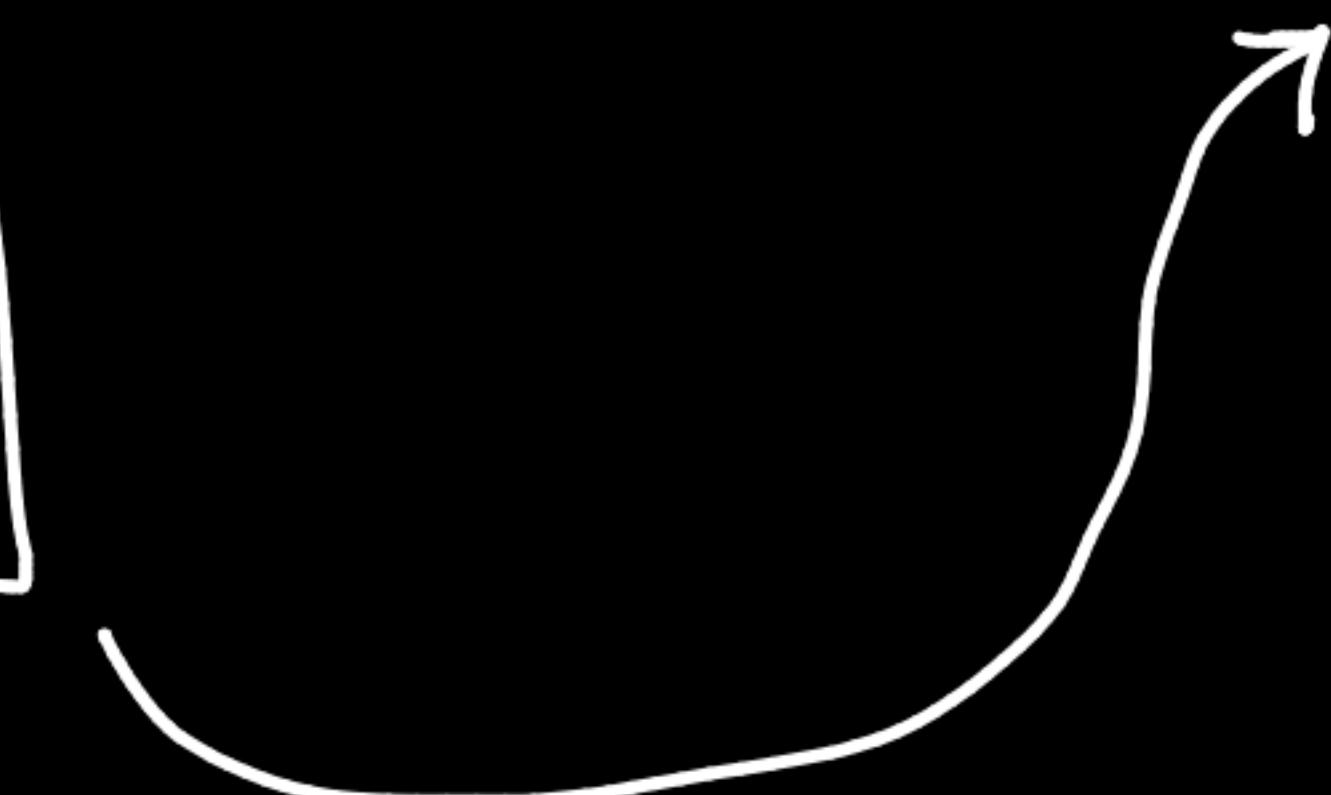
Plot it → Smooth curve
continuous

$f(w, w)$
 $\underset{d+1 \text{ var}}{\text{dotted}}$

$\lim_{x \rightarrow 0, y \rightarrow 0} f(x, y) = -5$

$$x \rightarrow 0$$

$$y \rightarrow 0$$



Live | DSML Advanced : Ca x | New Tab x | Google Search x | derivative_class.ipynb - Colab x | Google Search x +
google.com/search?q=plot%28x%5E2%2By%5E2-5%29&rlz=1C5CHFA_enIN958IN958&ei=L-o9Yt-XEYgaseMPI8KzqAg&ved=0ahUKEwf6__00-H2AhUBTwGHRfhDIUQ4dUDCA8&uact=5&oq=plot%28x%5E2%2By%5E2-5%29&g... Update

Google plot(x^2+y^2-5)

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About 22,20,00,000 results (0.44 seconds)

Graph for x^2+y^2-5

3D - Curve

$f(x,y) = x^2 + y^2 - 5 = z$

$x^2 + y^2 - z - 5 = 0$

From To
x -10.0000 10.0000
y -10.0000 10.0000
z -68.1513 184.482

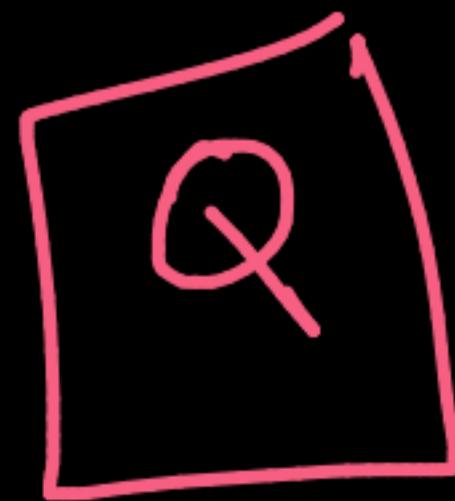
$$f(x,y,z) = \left\{ \begin{array}{c} \tilde{x^2} + \tilde{y^2} + \tilde{z^2} - 5 \\ 0 \quad 0 \quad 0 \end{array} \right\} \rightarrow \text{4D diagram}$$

$$\lim_{\substack{x \rightarrow 0 \\ y \rightarrow 0 \\ z \rightarrow 0}} f(x,y,z) = -5$$

4D parabolas



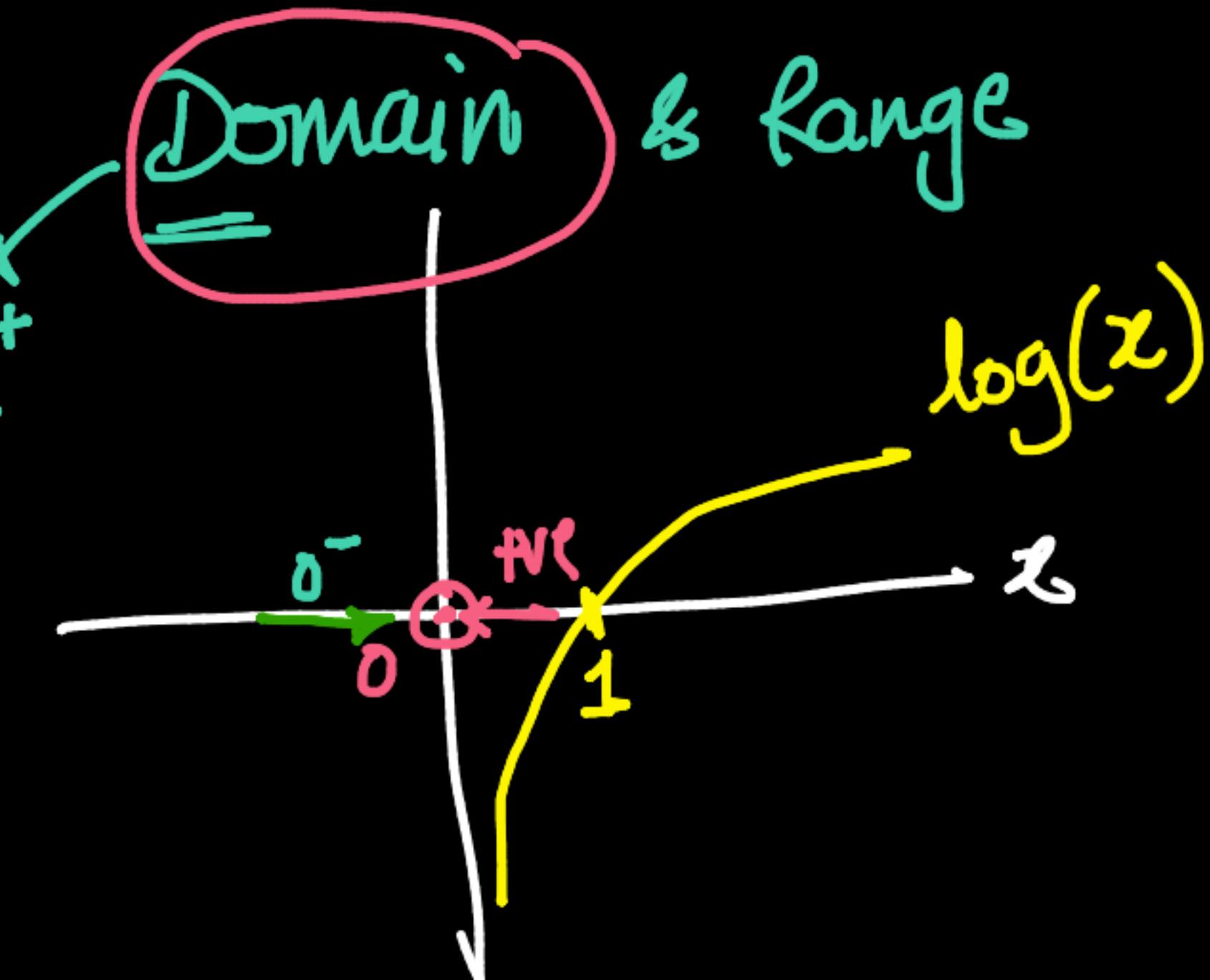
Smooth
continuous



$$\lim_{x \rightarrow 0} \log(x) = -\infty$$

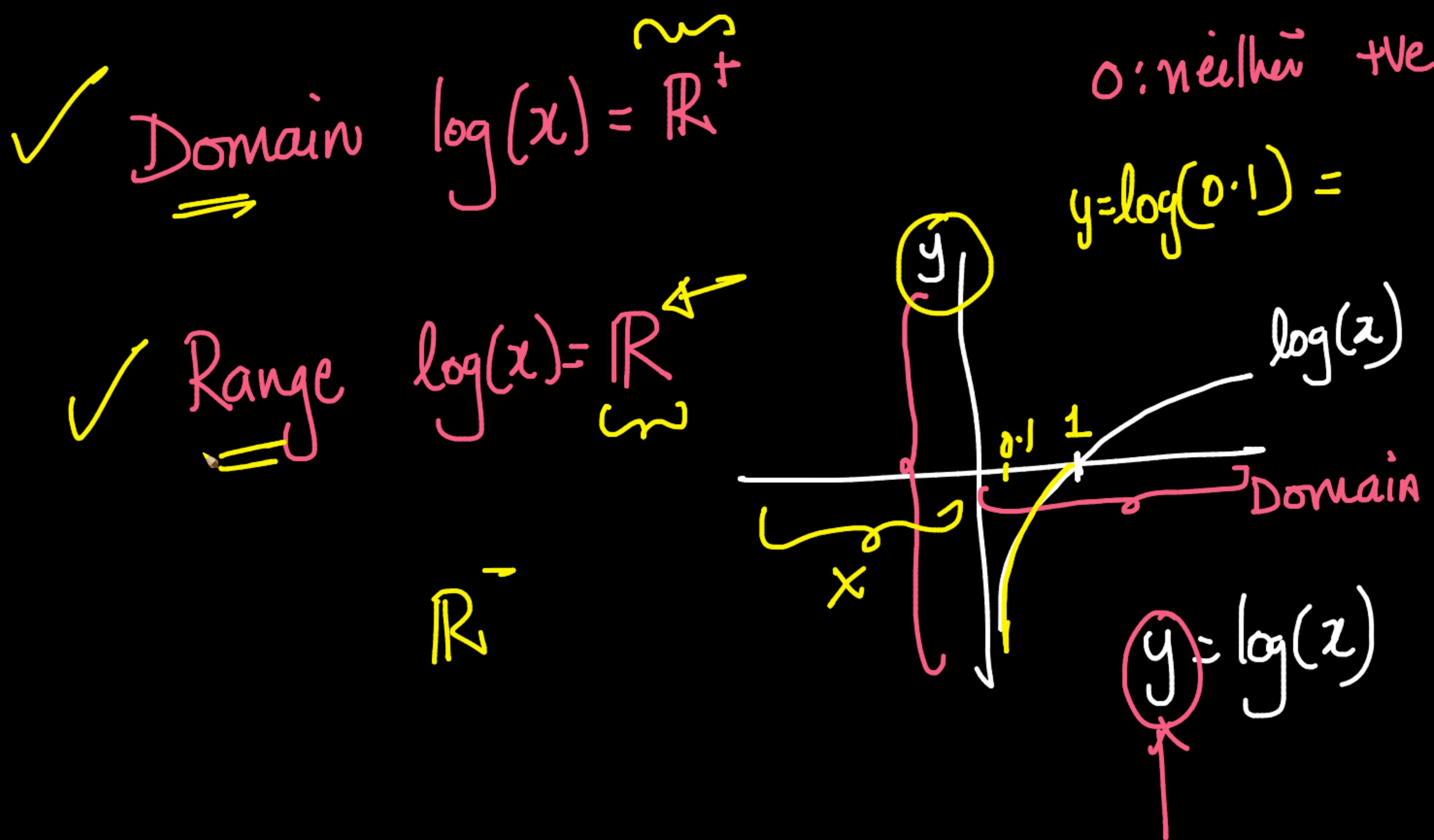
$$\left\{ \begin{array}{l} \lim_{x \rightarrow 0^+} \log(x) = -\infty \\ \lim_{x \rightarrow 0^-} \log(x) = -\infty \end{array} \right.$$

$$\times \left\{ \begin{array}{l} \lim_{x \rightarrow 0^-} \log(x) = \text{does not exist} \end{array} \right.$$



$$\log(-10) = \underline{\underline{\text{not defined}}}$$

$\log(x) = y$



Q

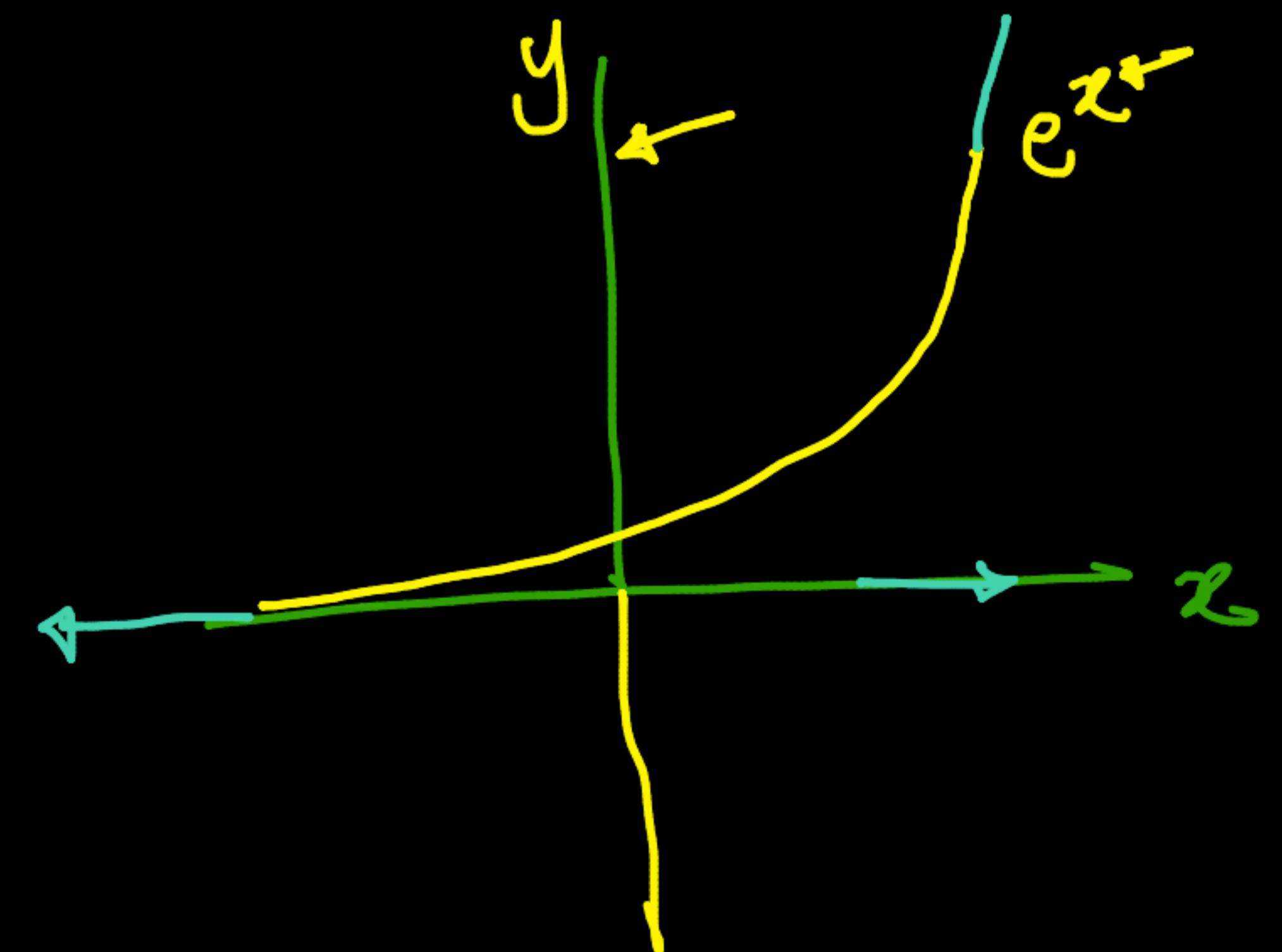
$$f(x) = e^x = \exp(x)$$

a Range: \mathbb{R}^+

b Domain: \mathbb{R}

$$\lim_{x \rightarrow \infty} e^x = \infty$$

$$\lim_{x \rightarrow -\infty} e^x = 0$$

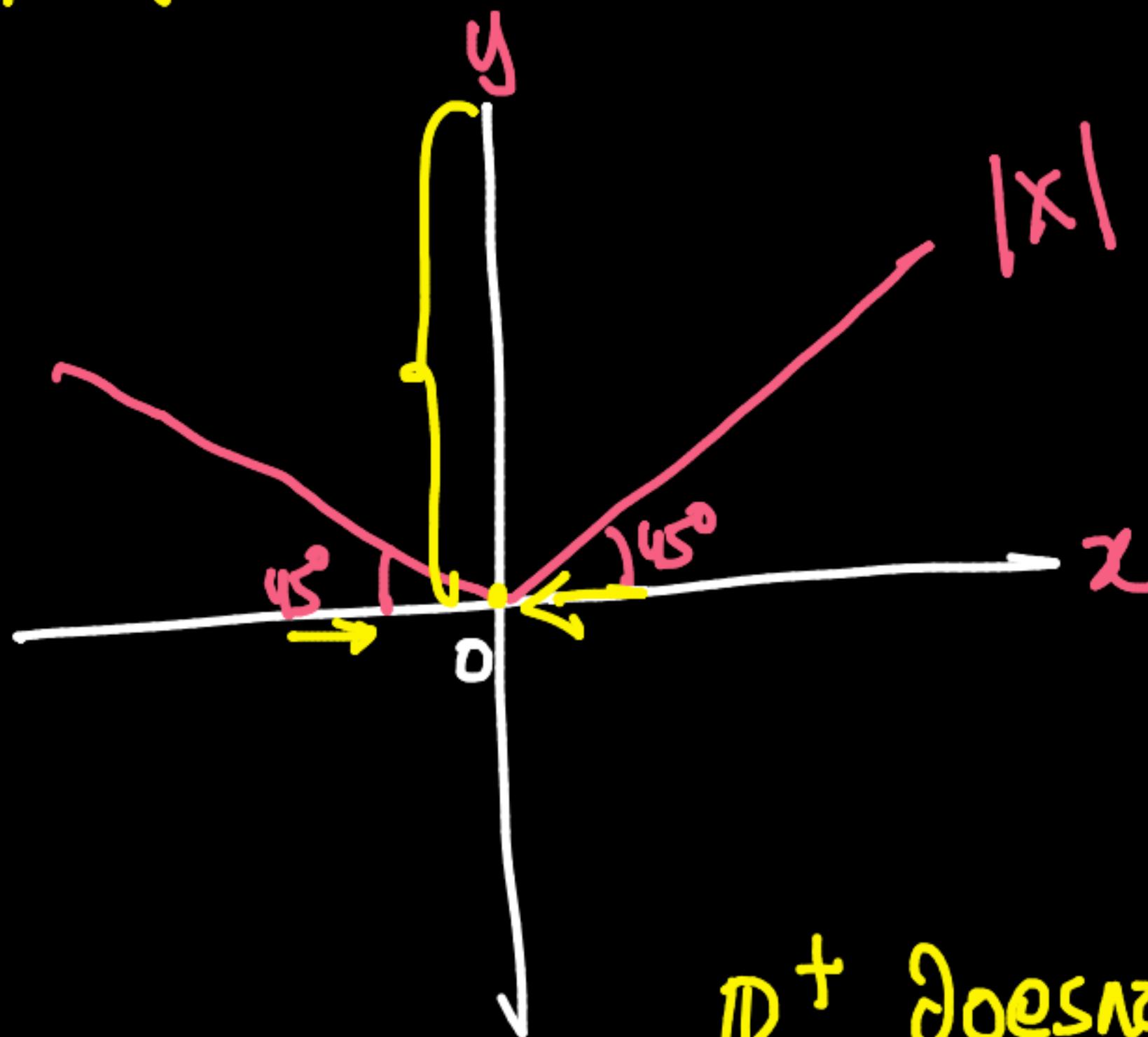


(Q) $f(x) = |x| \xrightarrow{\text{abs}} \text{shape: } \checkmark$

(a) Domain = \mathbb{R}

(b) Range = $\overline{\mathbb{R}^+ \cup \{0\}}$
 \downarrow
 \mathbb{R}_0^+ $[0, \infty)$

(c) $\lim_{x \rightarrow 0} |x| = 0$



\mathbb{R}^+ does not contain 0

ML:

Common-functions:

most
widely used ✓

$$\left\{ \begin{array}{l} x^1, x^2 \\ \frac{1}{x}, \sqrt{x} \\ \log(x), \exp(x) \\ |x| \end{array} \right. \rightarrow \text{std.dev}$$

e.g:

$$\|\underline{w}\|^2 = \sqrt{w_1^2 + w_2^2 + \dots + w_d^2}$$

combinations

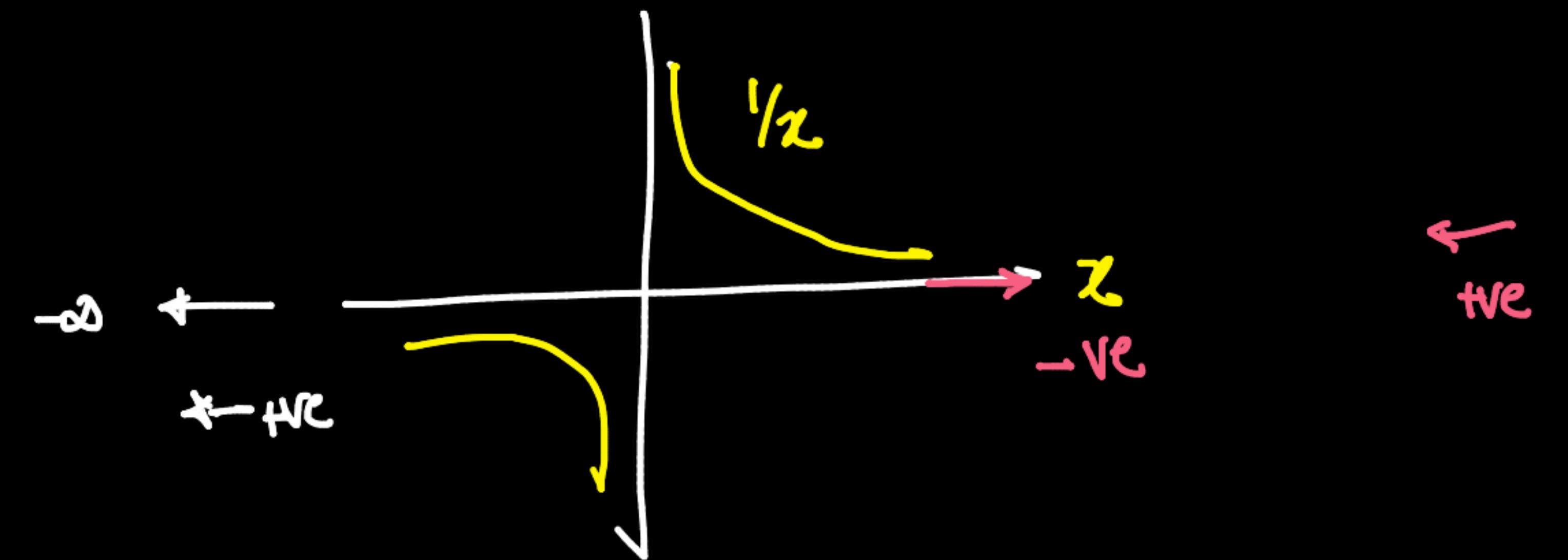
HINT: distributions

✓

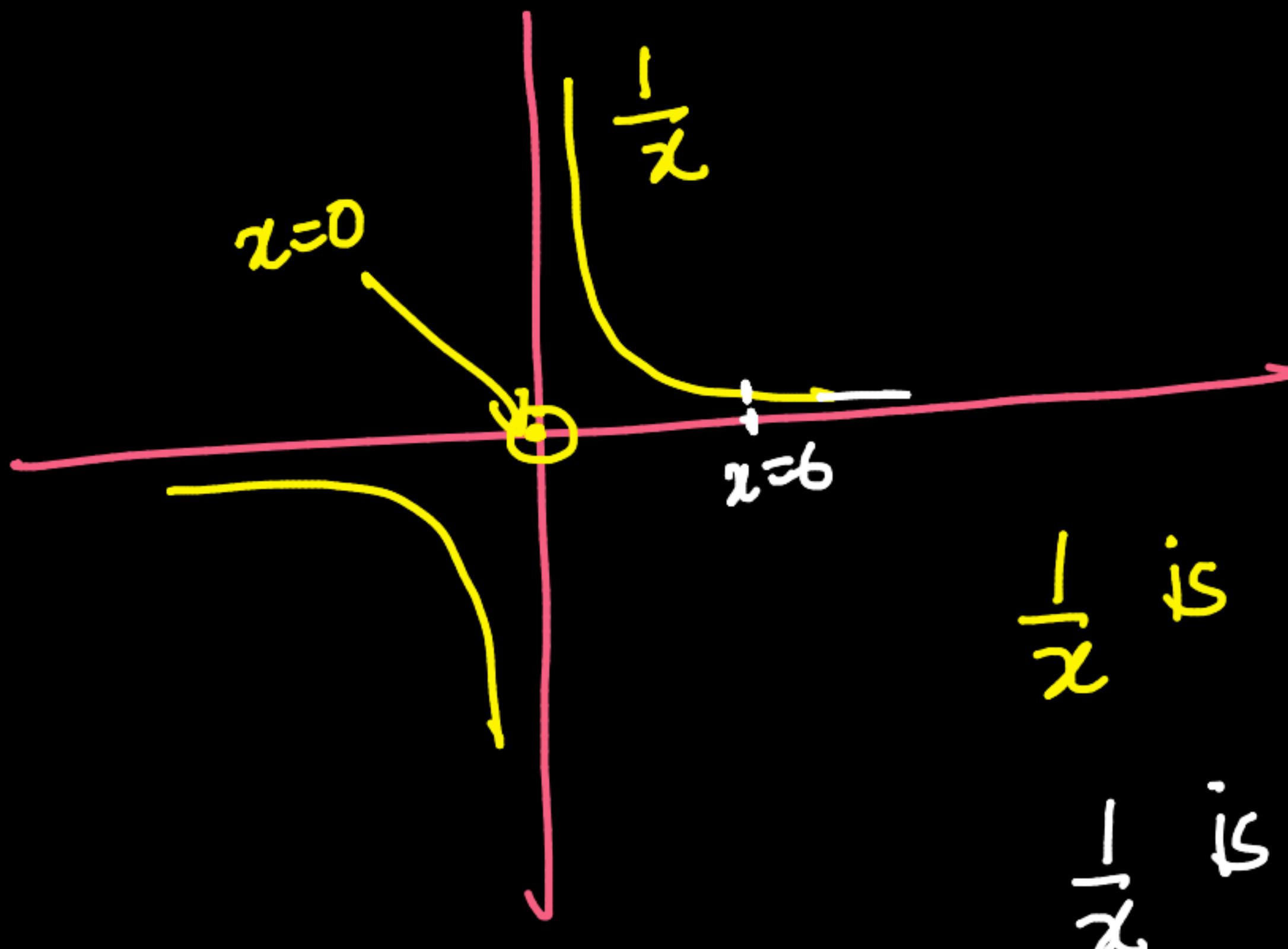
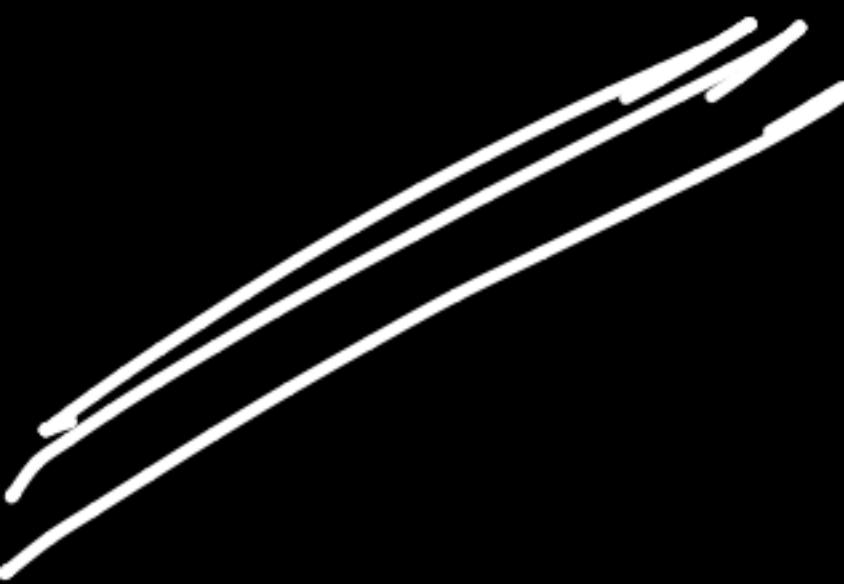
$\lim_{x \rightarrow \infty} \frac{1}{x}$

$\lim_{x \rightarrow \infty^+} \frac{1}{x}$

$\lim_{x \rightarrow \infty^-} \frac{1}{x}$



$$\lim_{x \rightarrow -\infty} \frac{1}{x} = \lim_{x \rightarrow \infty^+} \frac{1}{x}$$



Continuity →

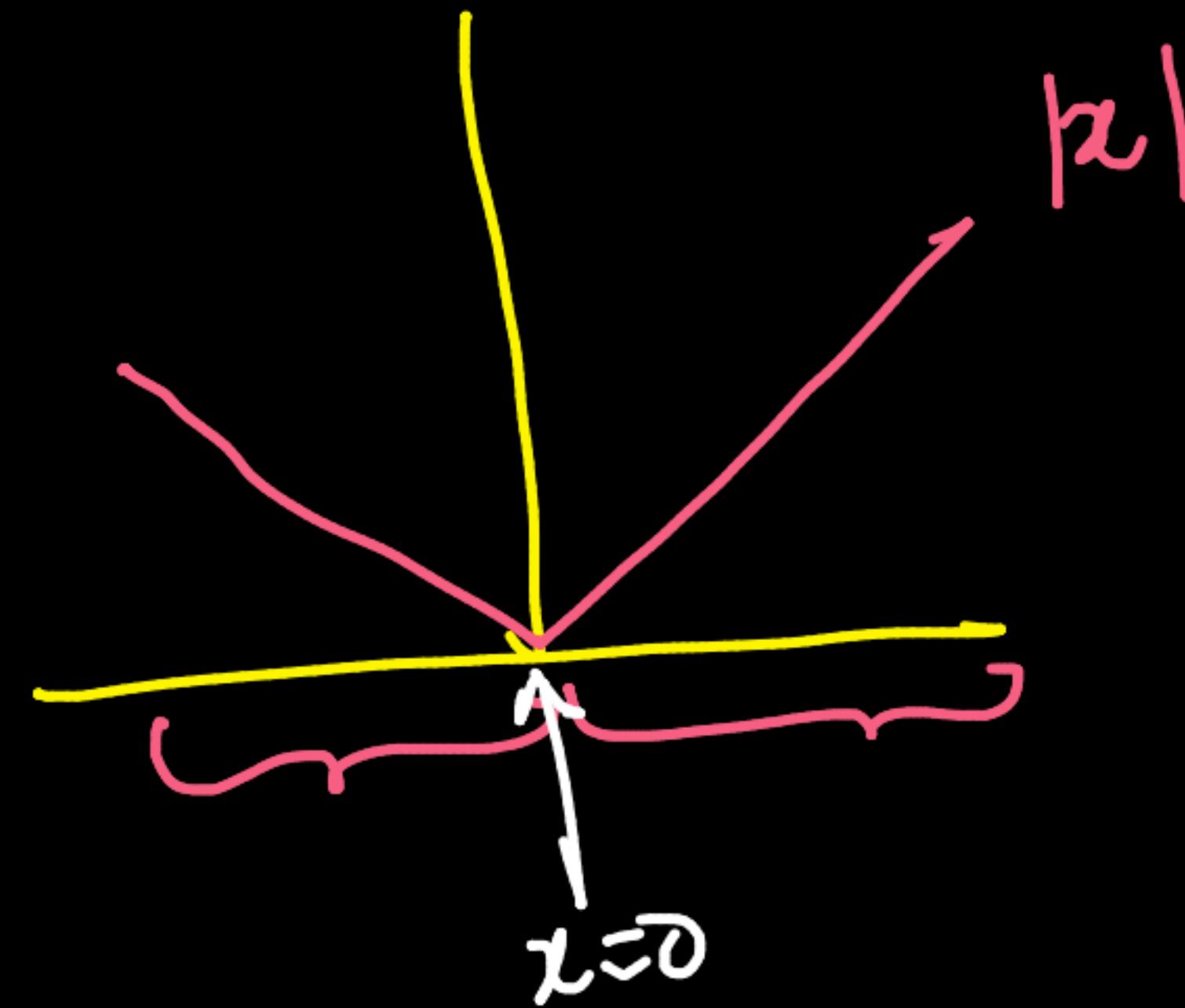
$\frac{1}{x}$ is non-continuous @ $x=0$

$\frac{1}{x}$ is continuous @ $x=1$



Where is $|x|$  is continuous?

continuous
everywhere



(Q) $\tan(x)$ discontinuous
↳ @ many locations

Live | DSML Advanced : Ca x | New Tab x | plot(log(x)) - Google Search x | derivative_class.ipynb - Colab x | plot(tan(x)) - Google Search x +
← → C google.com/search?q=plot%28tan%28x%29%29&rlz=1C5CHFA_enIN958IN958&ei=L-o9Yt-XEYGaseMPI8KzqAg&ved=0ahUKEwif6__00-H2AhUBTwGHRfhDIUQ4dUDCA8&uact=5&oq=plot%28tan%28x%29%29&gs_lcp=Cgdnd3... Update :

Google plot(tan(x))

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About 19,00,00,000 results (0.55 seconds)

Graph for tan(x)

x: 14.27359 y: -7.28460802

More info

[https://www.wolframalpha.com/input/?i=plot+tan\(x\)](https://www.wolframalpha.com/input/?i=plot+tan(x))

plot tan(x) - Wolfram|Alpha

WolframAlpha computational knowledge AI. **plot tan(x)**. Natural Language; Math Input. Use Math Input Mode to directly enter textbook math notation.

Videos

Graph of y=tan(x) (video) | Trigonometry
Khan Academy 10:12 13-Oct-2015

graph of y=tan(x)

28 / 28

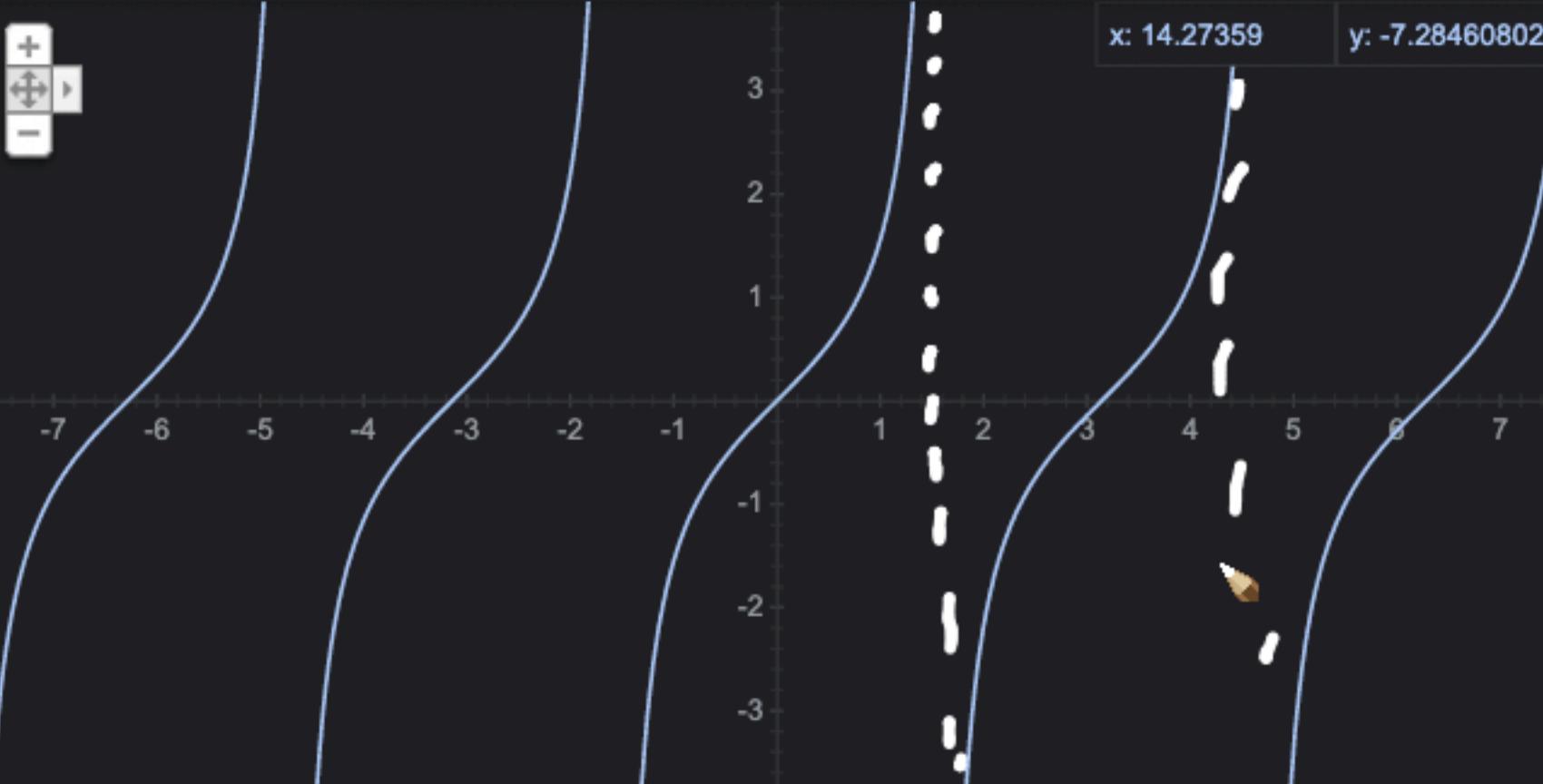
Live | DSML Advanced : Ca x | New Tab x | plot(log(x)) - Google Search x | derivative_class.ipynb - Colab x | plot(tan(x)) - Google Search x +
← → C google.com/search?q=plot%28tan%28x%29%29&rlz=1C5CHFA_enIN958IN958&ei=L-o9Yt-XEYGaseMPI8KzqAg&ved=0ahUKEwif6__00-H2AhUBTwGHRfhDIUQ4dUDCA8&uact=5&oq=plot%28tan%28x%29%29&gs_lcp=Cgdnd3... Update :

Google plot(tan(x))

All Images Maps Videos News More Tools

About 19,00,00,000 results (0.55 seconds)

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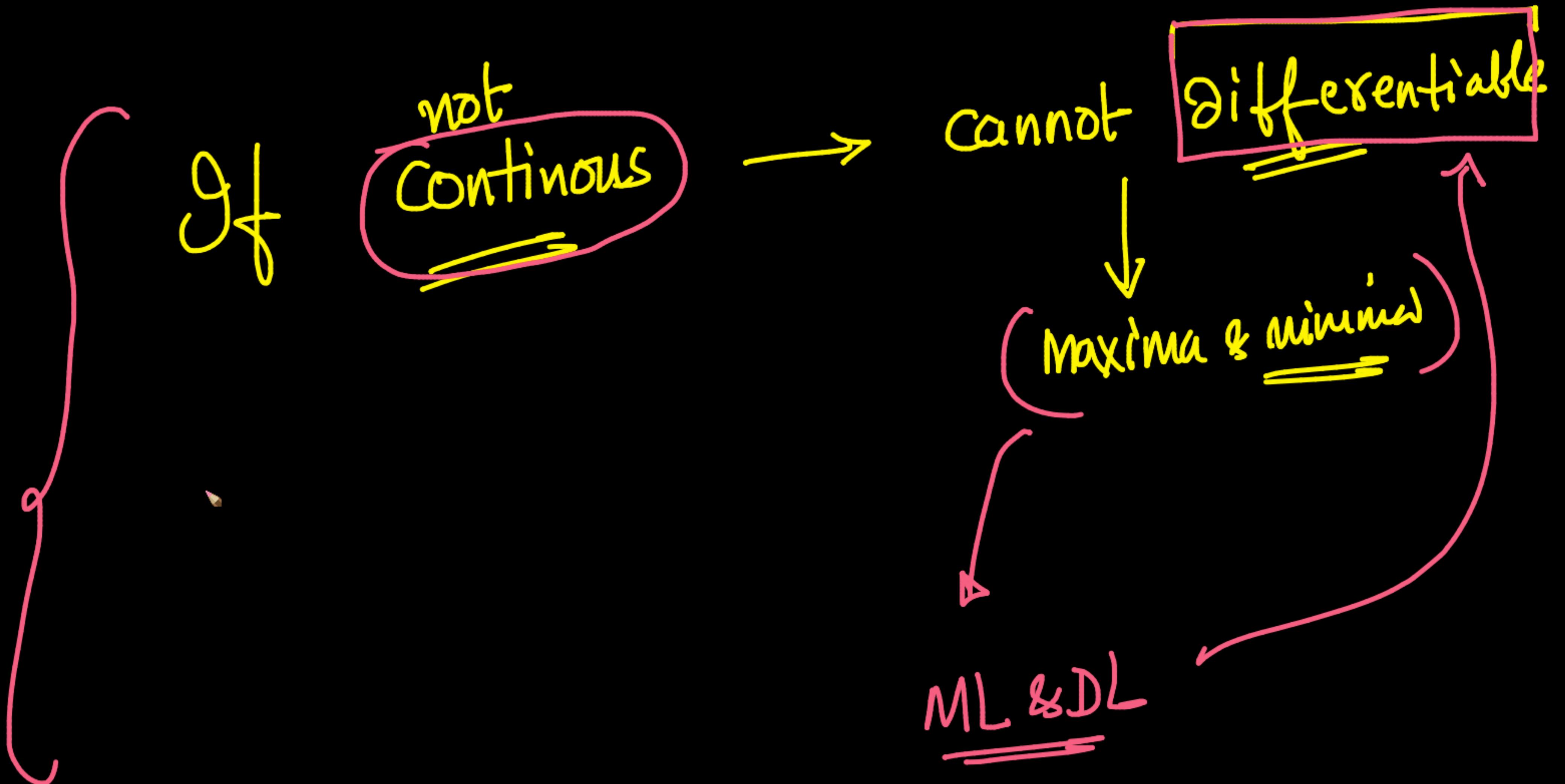
graph of y=tan(x)

Def:

$f(x)$ is continuous @ $x=a$

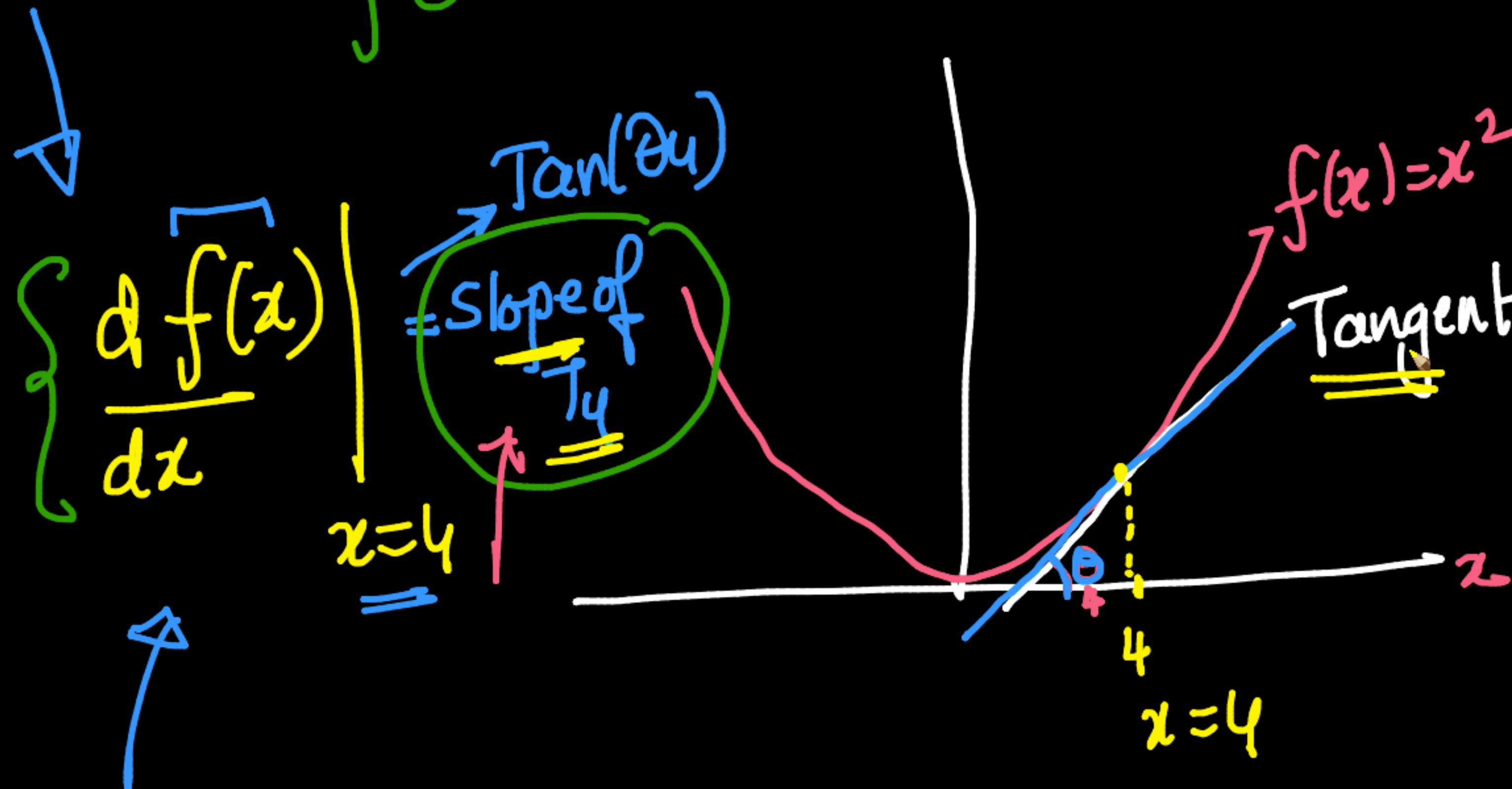
if $\lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a^+} f(x) = f(a)$

"no gaps"





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

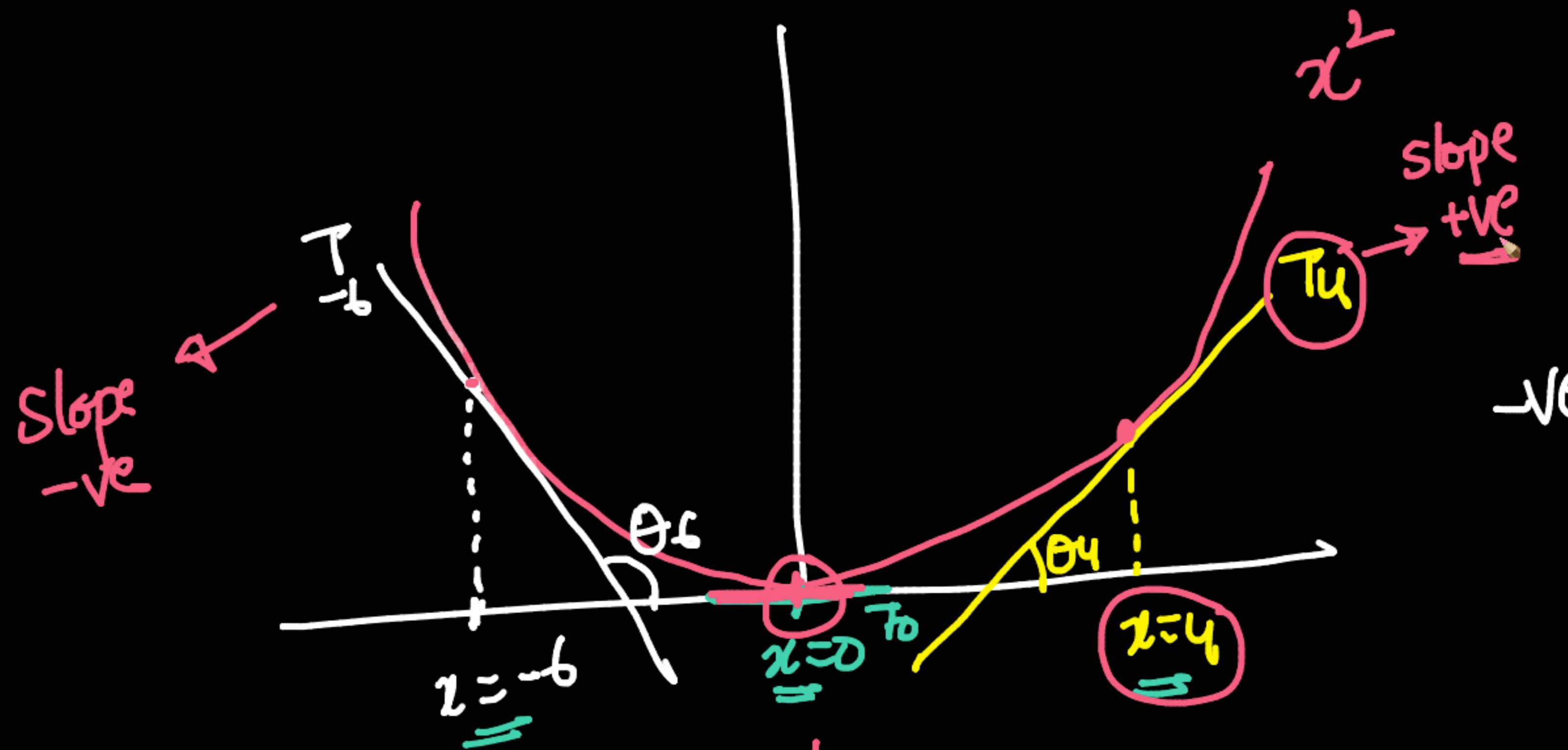


D^eivative
[Geometry]

T touches $f(x)$ only at $x=4$

$$\text{Slope of } T_4 = \tan(\theta_4)$$

$L \rightarrow R$



\downarrow

slope $\neq 0$

$0^\circ - 90^\circ$

0°

$90^\circ - 180^\circ$

+ve

Tan θ_L : $0^\circ \text{ to } 90^\circ$

θ_R : $90^\circ \text{ to } 180^\circ$

$\theta_0 : 0^\circ$

-ve

$$\left. \frac{df(x)}{dx} \right|_{x=a}$$

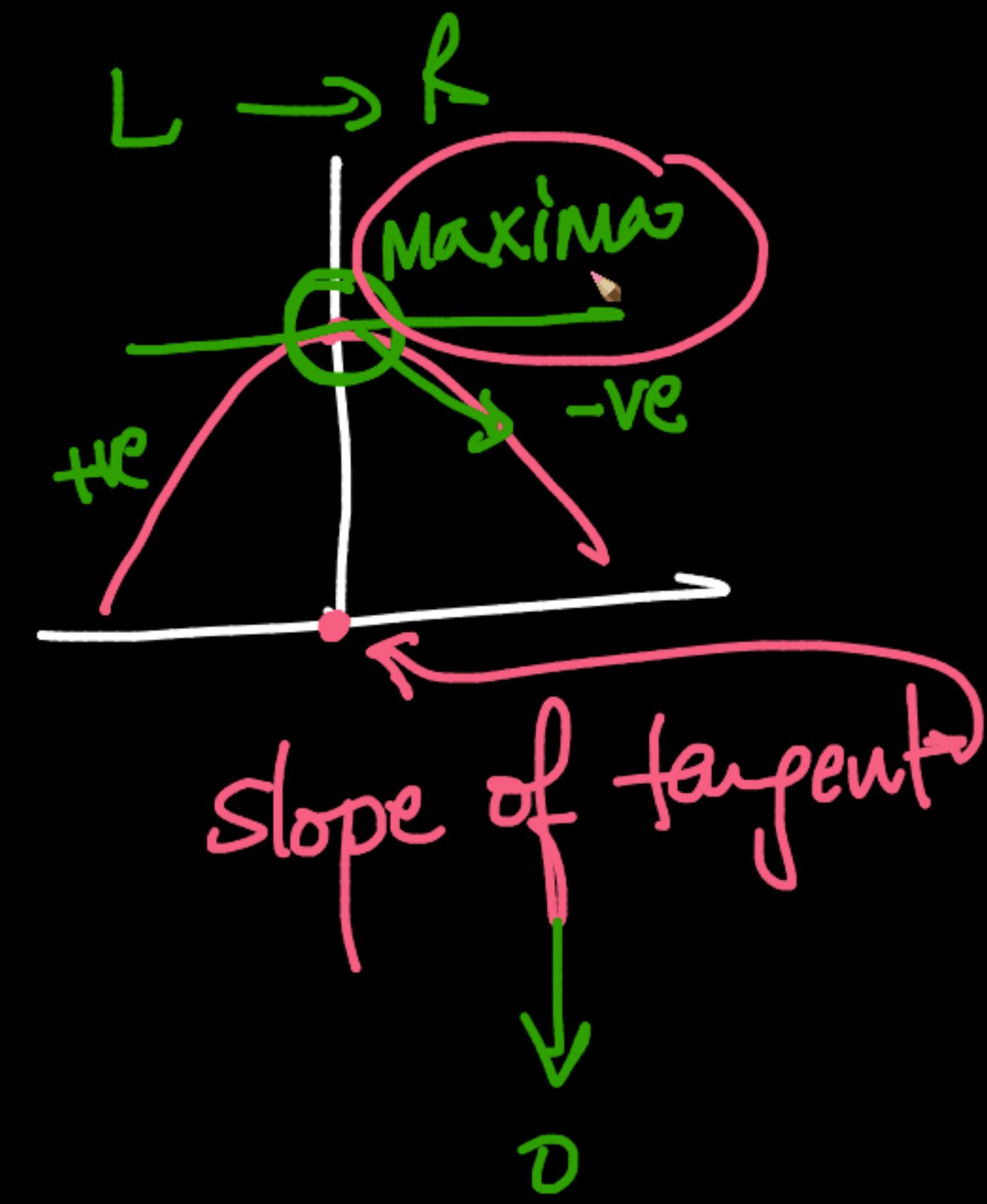
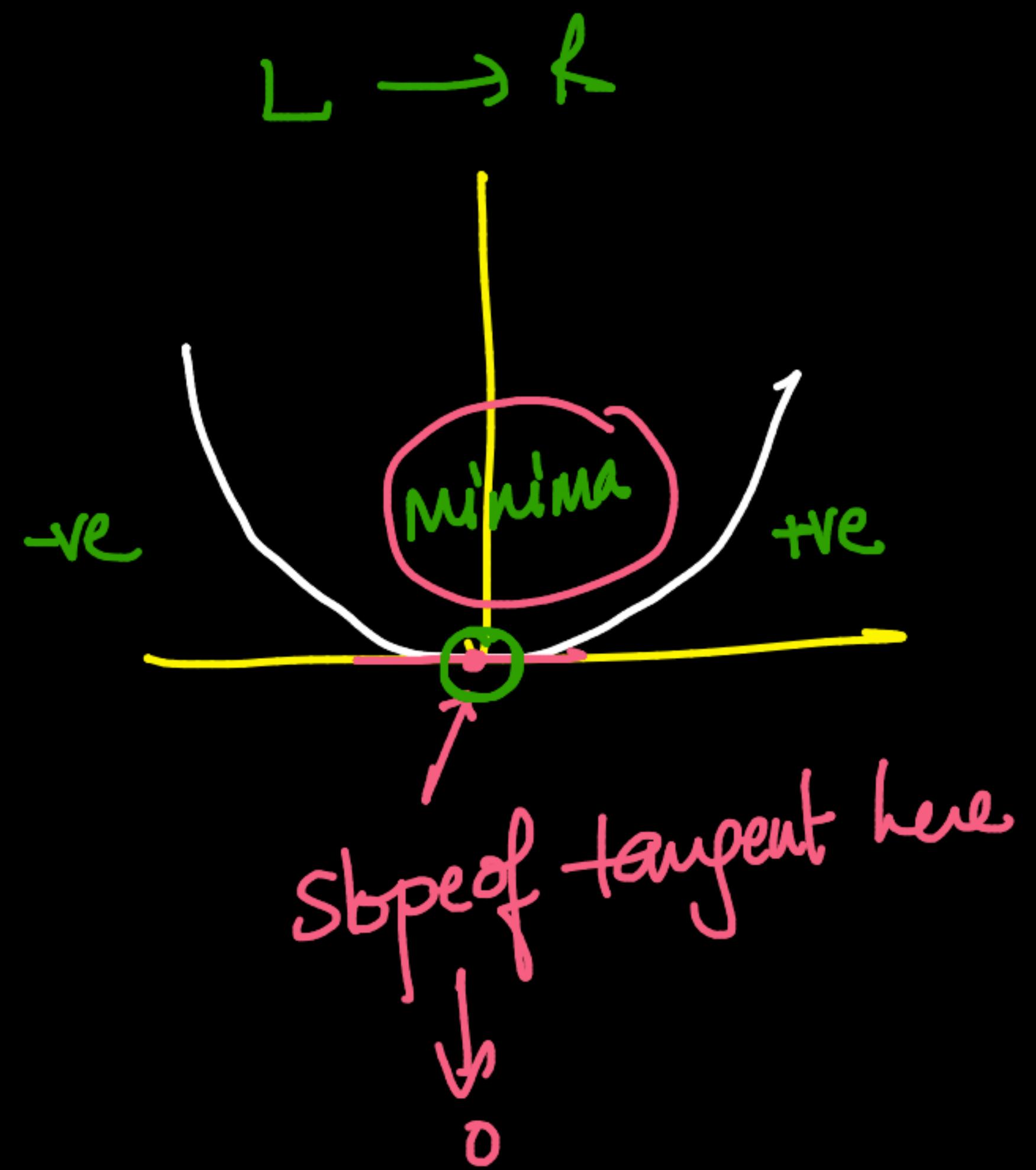
: +ve \rightarrow @ $x=a$ fu is increasing

$$\left. \frac{df(x)}{dx} \right|_{x=a}$$

: -ve \rightarrow @ $x=a$ fu is decreasing

$$\left. \frac{df(x)}{dx} \right|_{\underline{x=a}}$$

: 0 \rightarrow @ $x=a$ $\uparrow \downarrow$
minima or maxima





Live | DSML Advanced : Ca x | New Tab x | Google Search x | derivative_class.ipynb - Colab x | Google Search x +
google.com/search?q=plot%28x%5E3%29&rlz=1C5CHFA_enIN958IN958&ei=LfE9Yo-tLoXB3LUP8tOxsAY&ved=0ahUKEwjP9-HK2uH2AhWFILcAHfJpDGYQ4dUDCA8&uact=5&oq=plot%28x%5E3%29&gs_lcp=Cgdnd3Mtd2l6EAMyB... Update

Google plot(x^3)

All Shopping Images News Maps More Tools

About 6,95,00,00,000 results (0.57 seconds)

Graph for x^3

θ_6

Algebra 2

$$\frac{dx^3}{dx} = 3x^2 \quad (\text{lateY})$$
$$\left. \frac{dx^3}{dx} \right|_{x=6} = \tan \theta_6$$

People also ask :

- How do I plot x^3 ?
- What does X^3 mean on a graph?
- What kind of graph is x^3 ?
- How do you plot in math?

Feedback

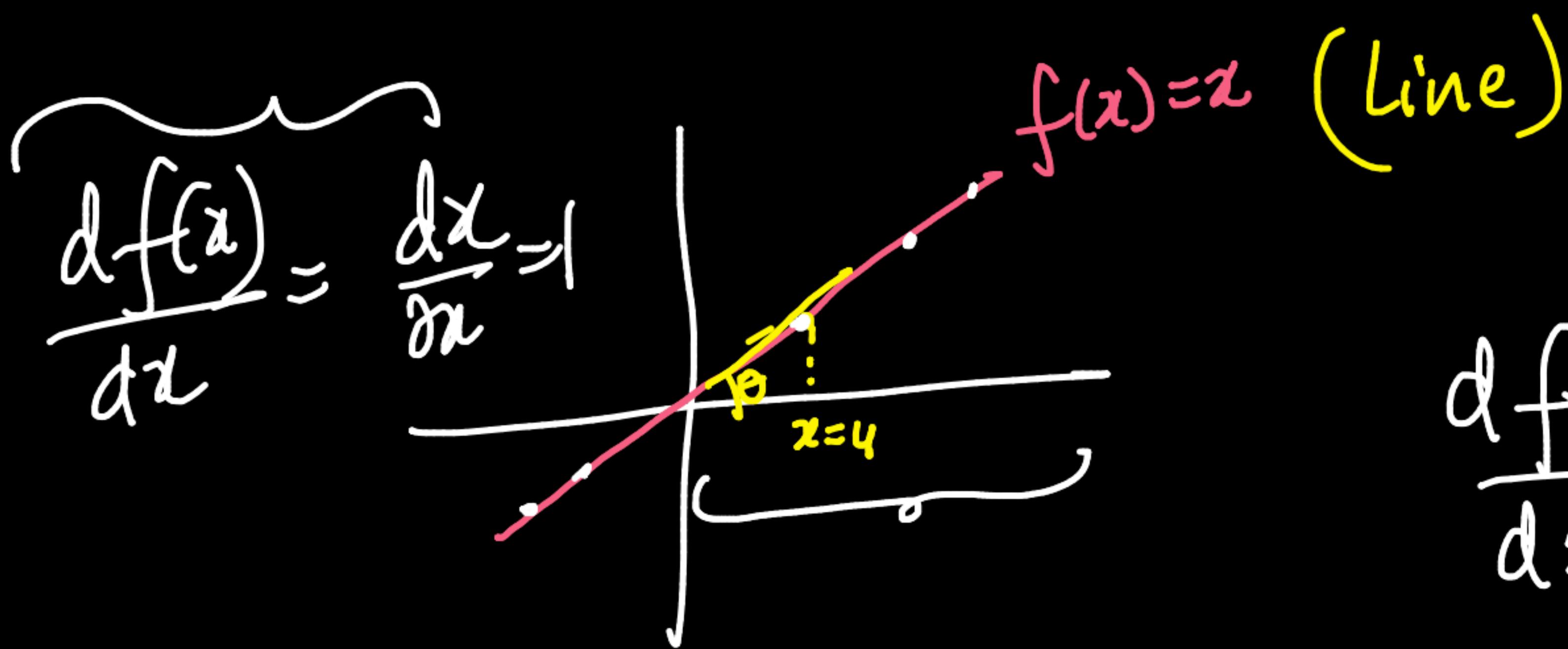
<https://www.wolframalpha.com/examples/mathematics/>

(latey)

$$\left\{ \frac{dC}{dx} = 0 \quad \checkmark \right.$$

algebraic

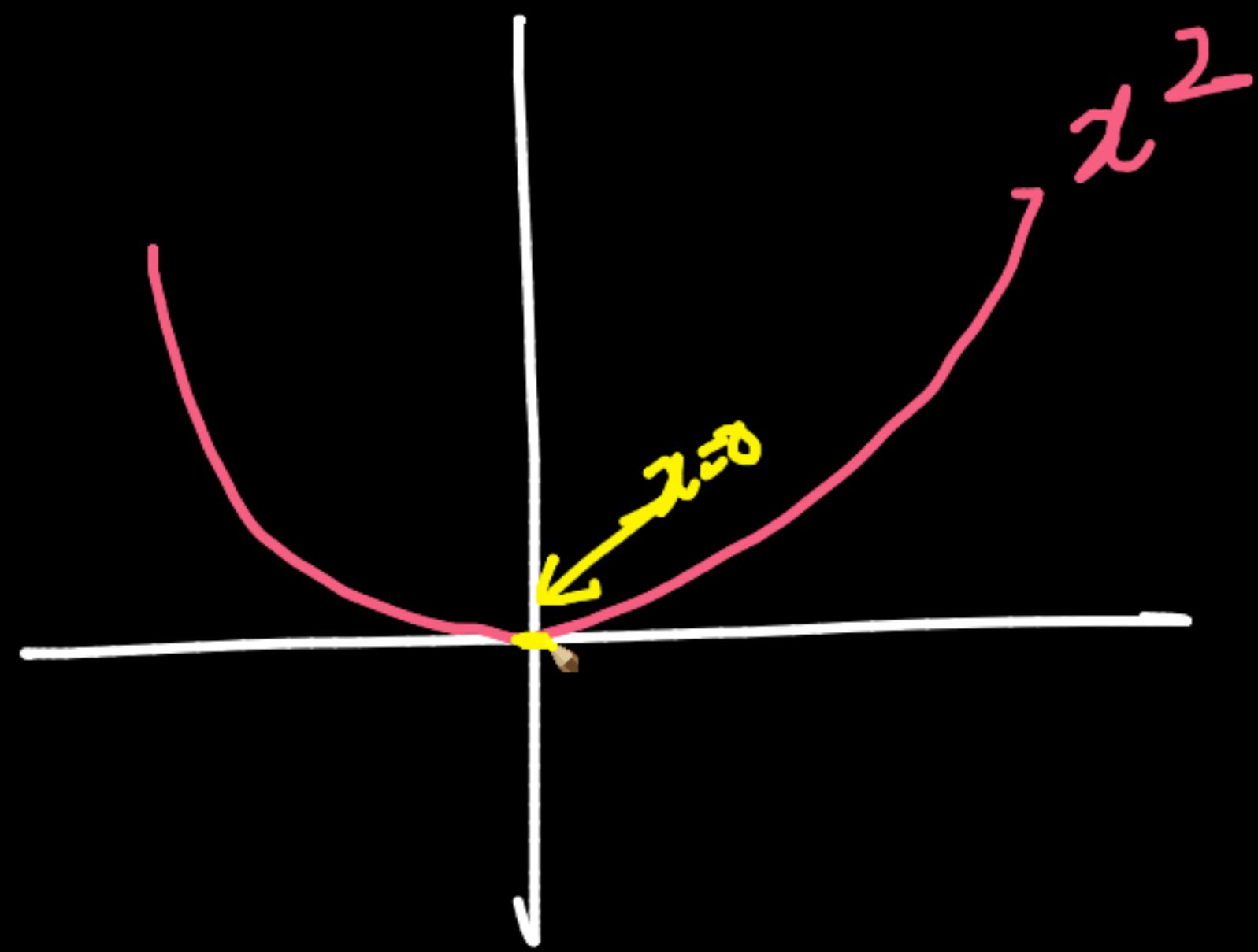
$$\left\{ \left. \frac{df(x)}{dx} \right|_{x=a} = 0 \rightarrow \text{Minima / Maxima} \atop @ x=a \right.$$



$$\frac{df(x)}{dx} = 0 \text{ anywhere}$$

Maxima $\rightarrow \infty$

Minima $\rightarrow -\infty$





$$f(x) = |x|$$

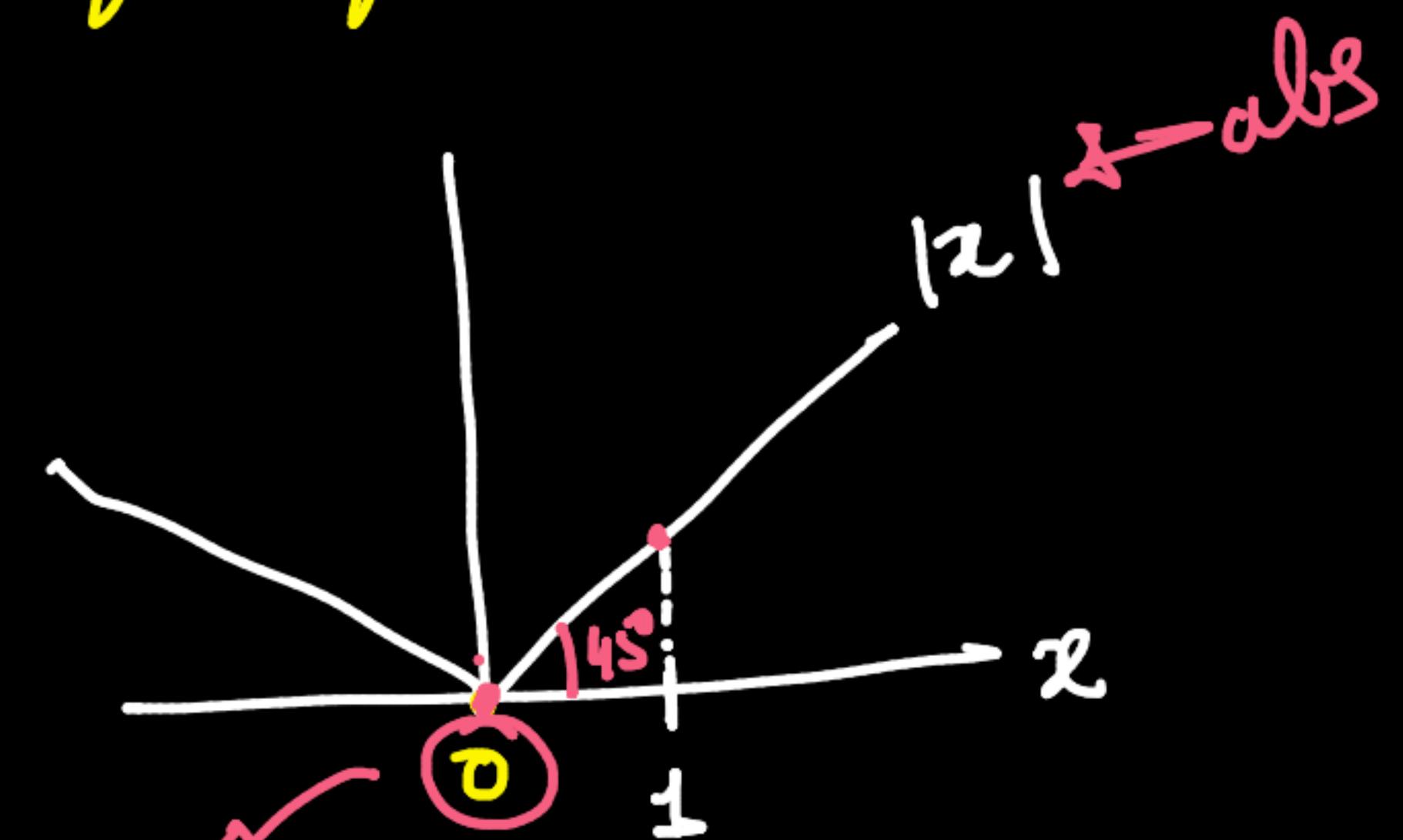
NOT differentiable @ $x=0$

0 to ∞

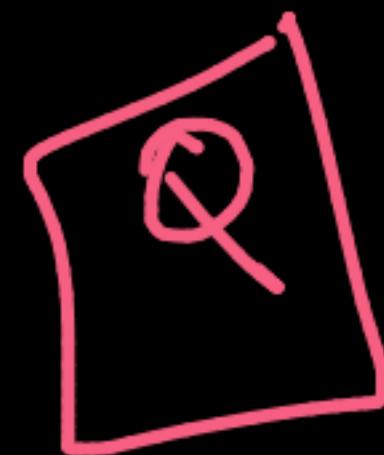
Slope @ $x=1 \rightarrow +ve / -ve / 0$

✓ [Q] Slope @ $x=0$

not-defined



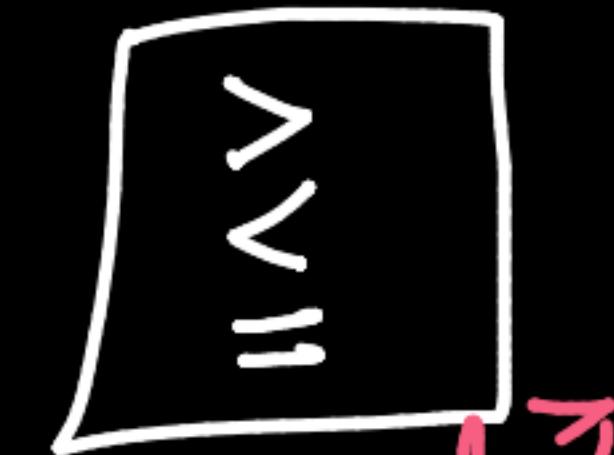
$\frac{d|x|}{dx}|_{x=0}$ = slope of Tangent
@ $x=0$



$\log(x)$ how fast
(+ve) $\tan(\theta_1)$

slope @ $x=1$

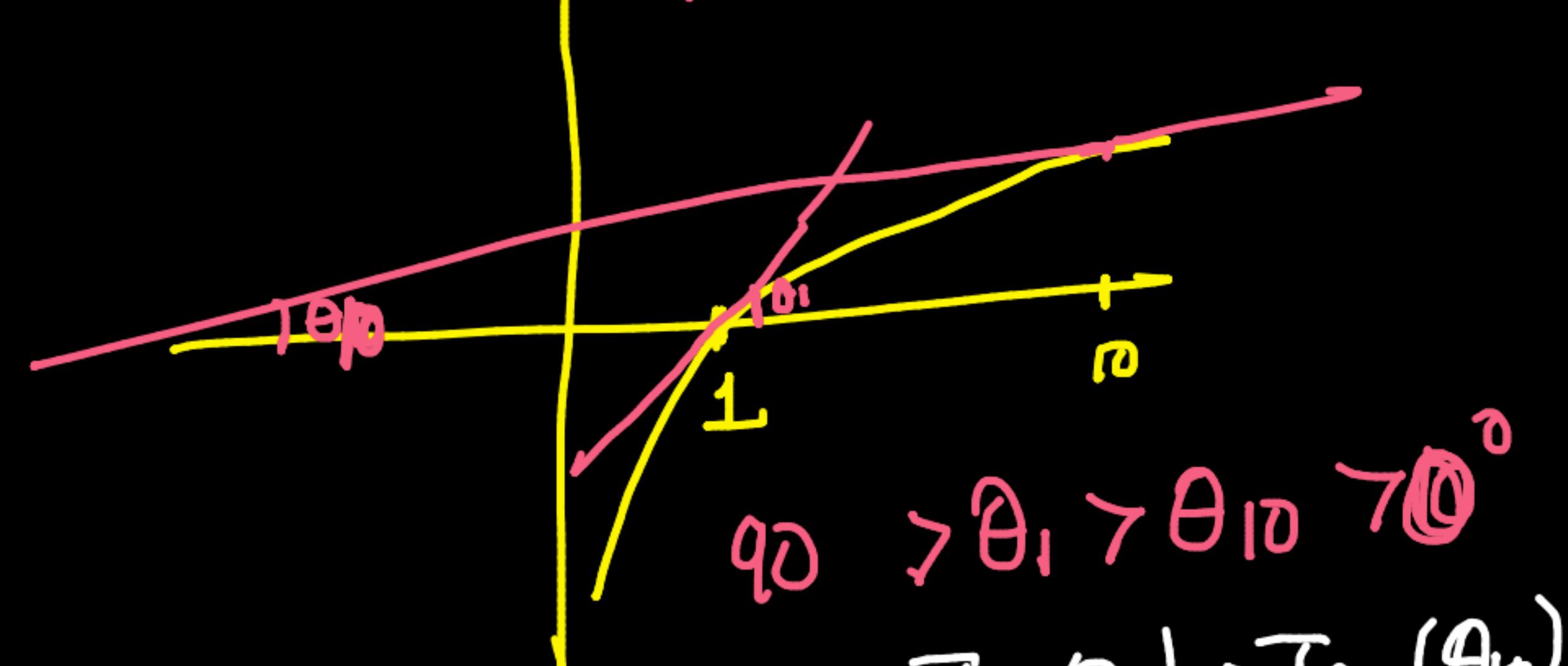
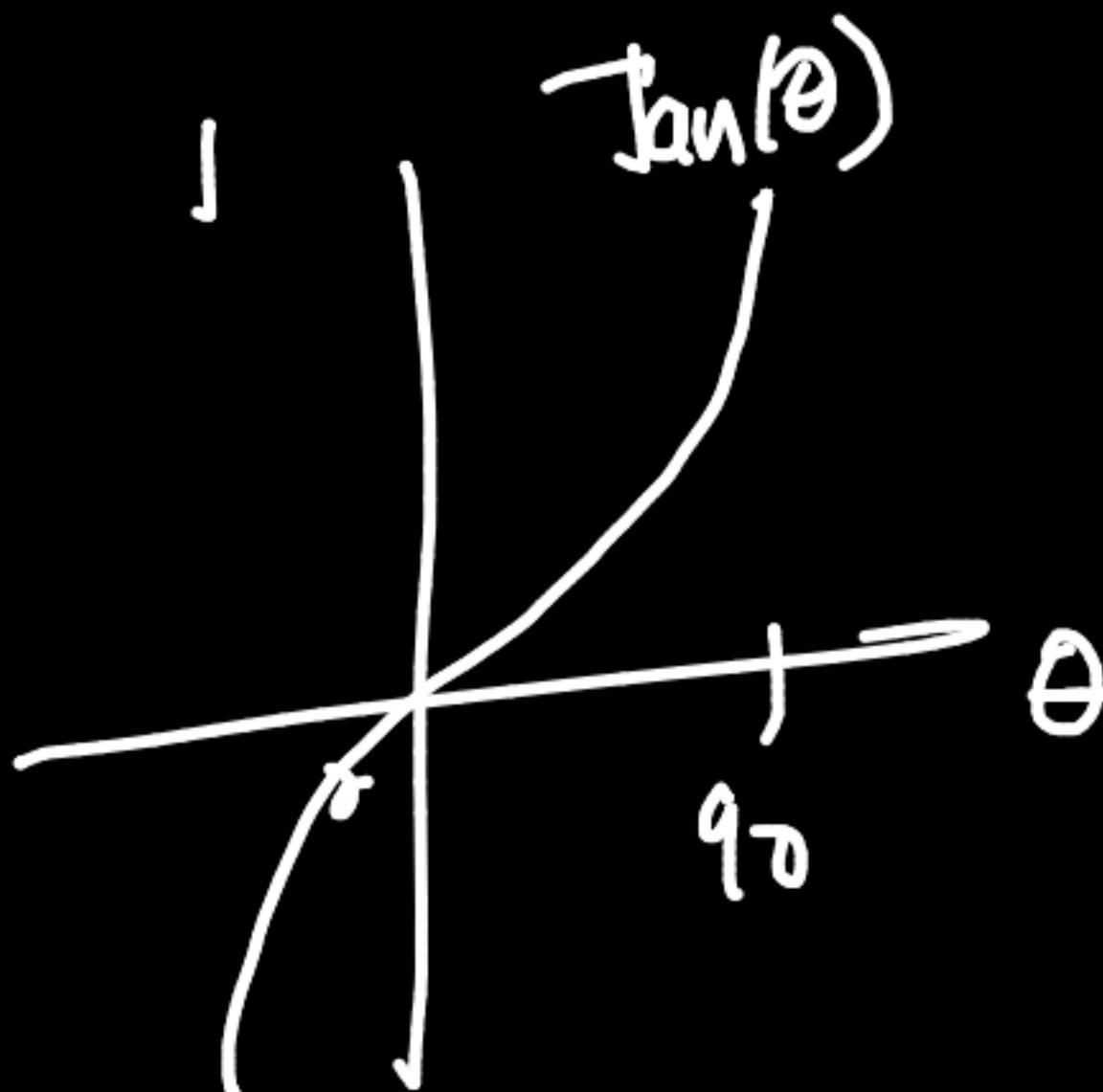
?



greater than

inc? $\tan(\theta_{10})$

slope @ $x=10$



$$\tan(\theta_1) > \tan(\theta_{10})$$

Live | DSML Advanced : Ca x | New Tab x | plot(log(x)) - Google Search x | derivative_class.ipynb - Colab x | plot(log(x)) - Google Search x +
← → C 🔒 google.com/search?q=plot%28log%28x%29%29&rlz=1C5CHFA_enIN958IN958&ei=-fU9Yuj2BITWz7sP776QqA4&ved=0ahUKEwio1_-T3-H2AhUE63MBHW8fBOUQ4dUDCA8&uact=5&oq=plot%28log%28x%29%29&gs_lcp=Cgdnd...

Google plot(log(x))

All Maps Images Videos News More Tools

About 4,92,00,00,000 results (0.46 seconds)

Graph for log(x)

x: 0.573891367 y: -0.241170309

More info

<https://www.rapidtables.com/math/algebra/logarithm/graph.htm>

logarithm graph | graph of log(x) - RapidTables

Graph of $\log(x)$. $\log(x)$ function graph. Logarithm graph. $y = f(x) = \log_{10}(x)$. $\log(x)$ graph properties. $\log(x)$ is defined for positive values of x . $\log(x)$...

People also ask :

How do you graph log X?

How do you plot a log-log plot?

What does the graph log X look like?

Live | DSML Advanced : Ca x | New Tab x | plot(log(x)) - Google Search x | derivative_class.ipynb - Colab x | plot(log(x)) - Google Search x +
← → C google.com/search?q=plot%28log%28x%29%29&rlz=1C5CHFA_enIN958IN958&ei=-fU9Yuj2BITWz7sP776QqA4&ved=0ahUKEwio1_-T3-H2AhUE63MBHW8fBOUQ4dUDCA8&uact=5&oq=plot%28log%28x%29%29&gs_lcp=Cgdnd...

Google plot(log(x))

All Maps Images Videos News More Tools

About 4,92,00,00,000 results (0.46 seconds)

Graph for log(x)

x: 21.6122602 y: 1.33470019

More info

<https://www.rapidtables.com/math/algebra/logarithm/graph.htm>

logarithm graph | graph of log(x) - RapidTables

Graph of $\log(x)$. $\log(x)$ function graph. Logarithm graph. $y = f(x) = \log_{10}(x)$. $\log(x)$ graph properties. $\log(x)$ is defined for positive values of x . $\log(x)$...

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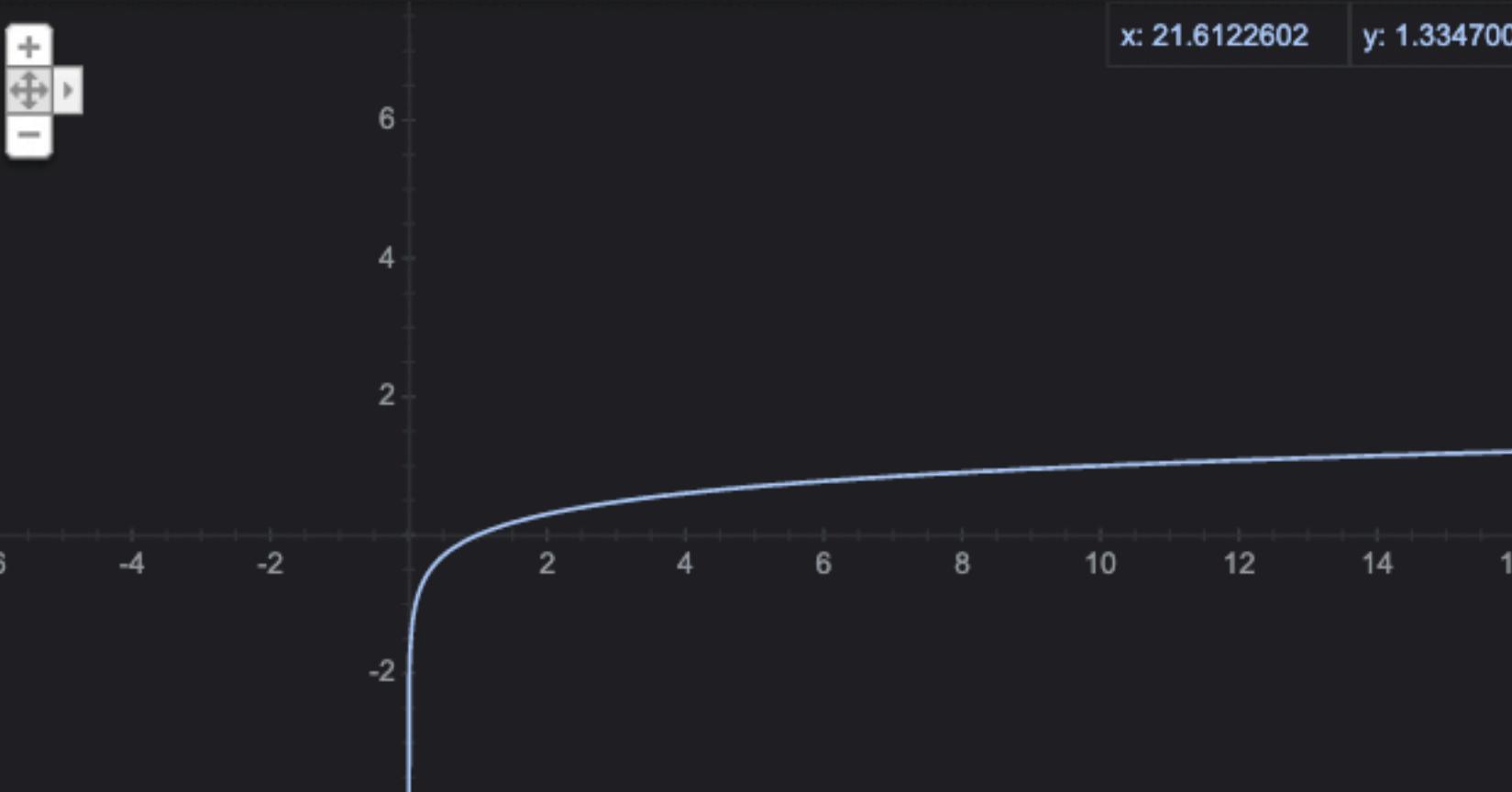
Live | DSML Advanced : Ca x | New Tab x | plot(log(x)) - Google Search x | derivative_class.ipynb - Colab x | plot(log(x)) - Google Search x +
← → C google.com/search?q=plot%28log%28x%29%29&rlz=1C5CHFA_enIN958IN958&ei=-fU9Yuj2BITWz7sP776QqA4&ved=0ahUKEwio1_-T3-H2AhUE63MBHW8fBOUQ4dUDCA8&uact=5&oq=plot%28log%28x%29%29&gs_lcp=Cgdnd...

Google plot(log(x))

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About 4,92,00,00,000 results (0.46 seconds)

Graph for log(x)



x: 21.6122602 y: 1.33470019

More info

<https://www.rapidtables.com/math/algebra/logarithm/graph.htm>

logarithm graph | graph of log(x) - RapidTables

Graph of $\log(x)$. $\log(x)$ function graph. Logarithm graph. $y = f(x) = \log_{10}(x)$. $\log(x)$ graph properties. $\log(x)$ is defined for positive values of x . $\log(x)$...

People also ask :

How do you graph log X?

How do you plot a log-log plot?

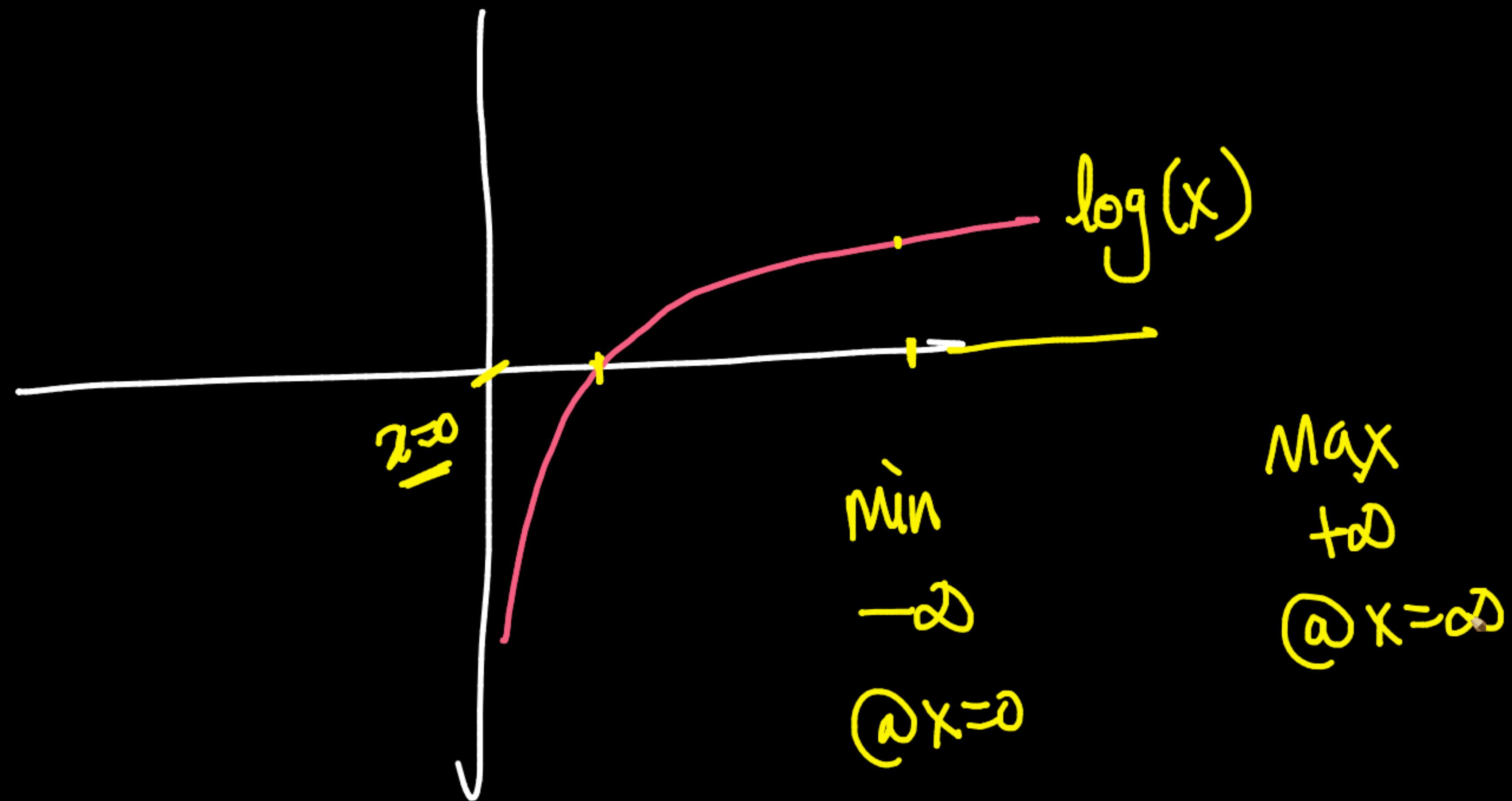
What does the graph log X look like?

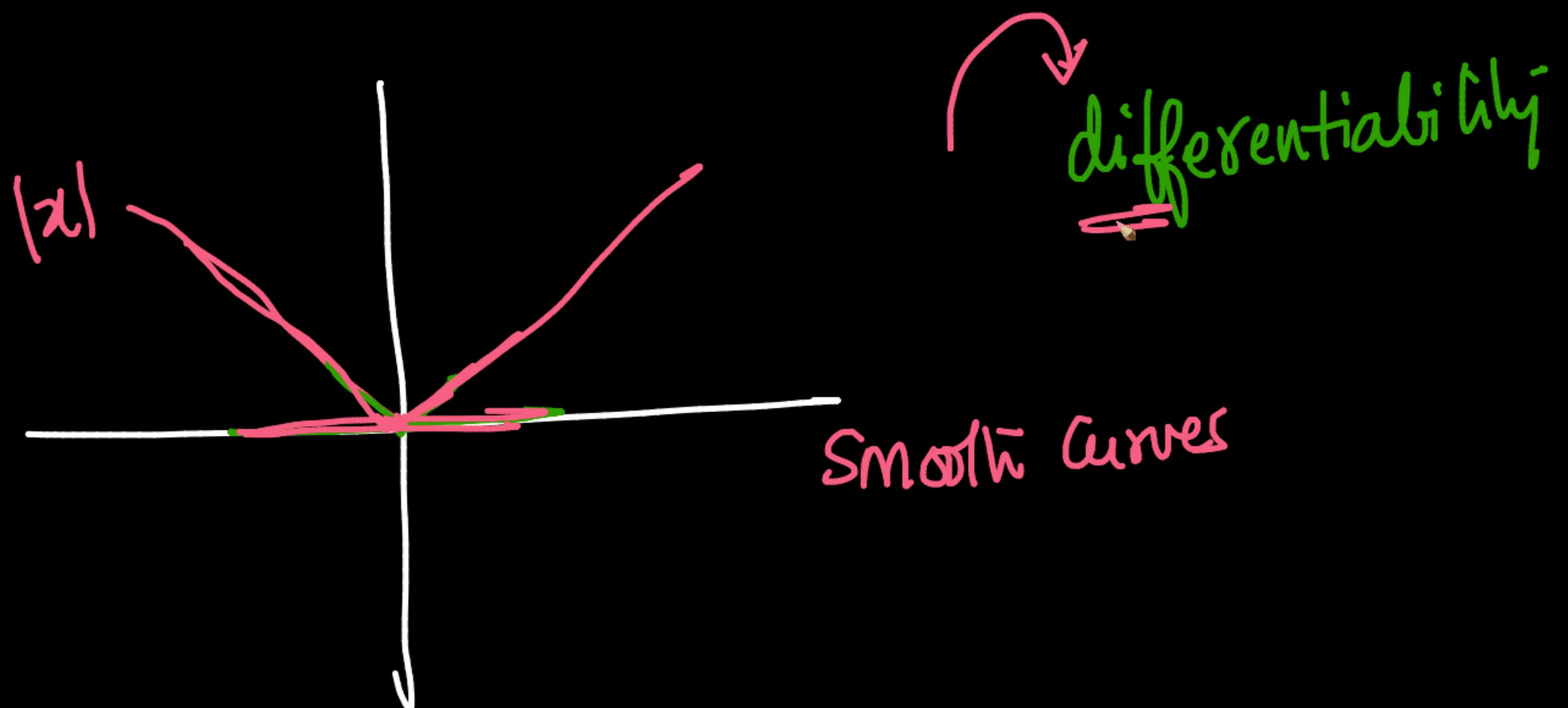
\checkmark Slope of Tangent @ $x=a_1$ > Slope of T @ $x=a_2$

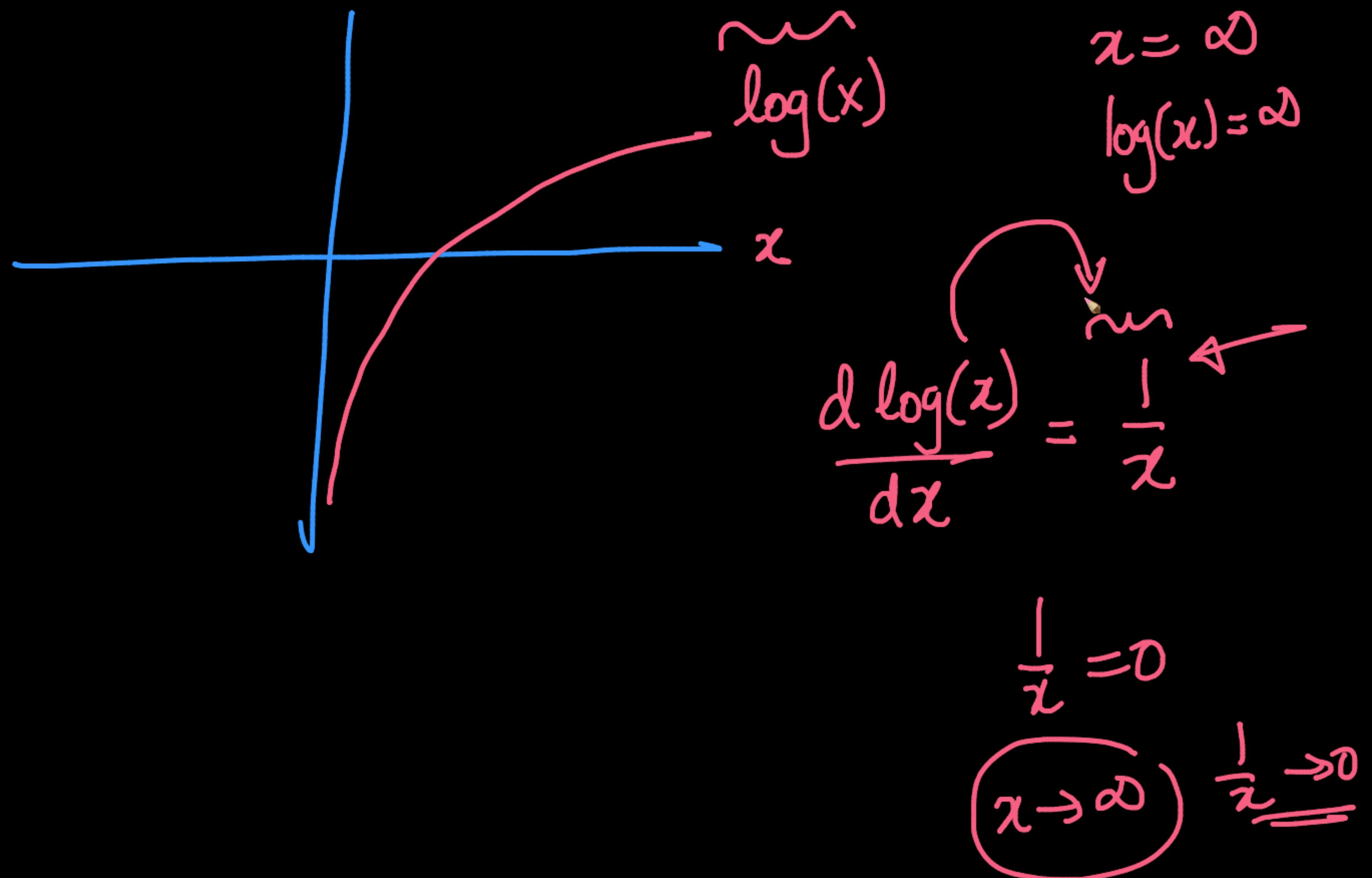
+ve +ve

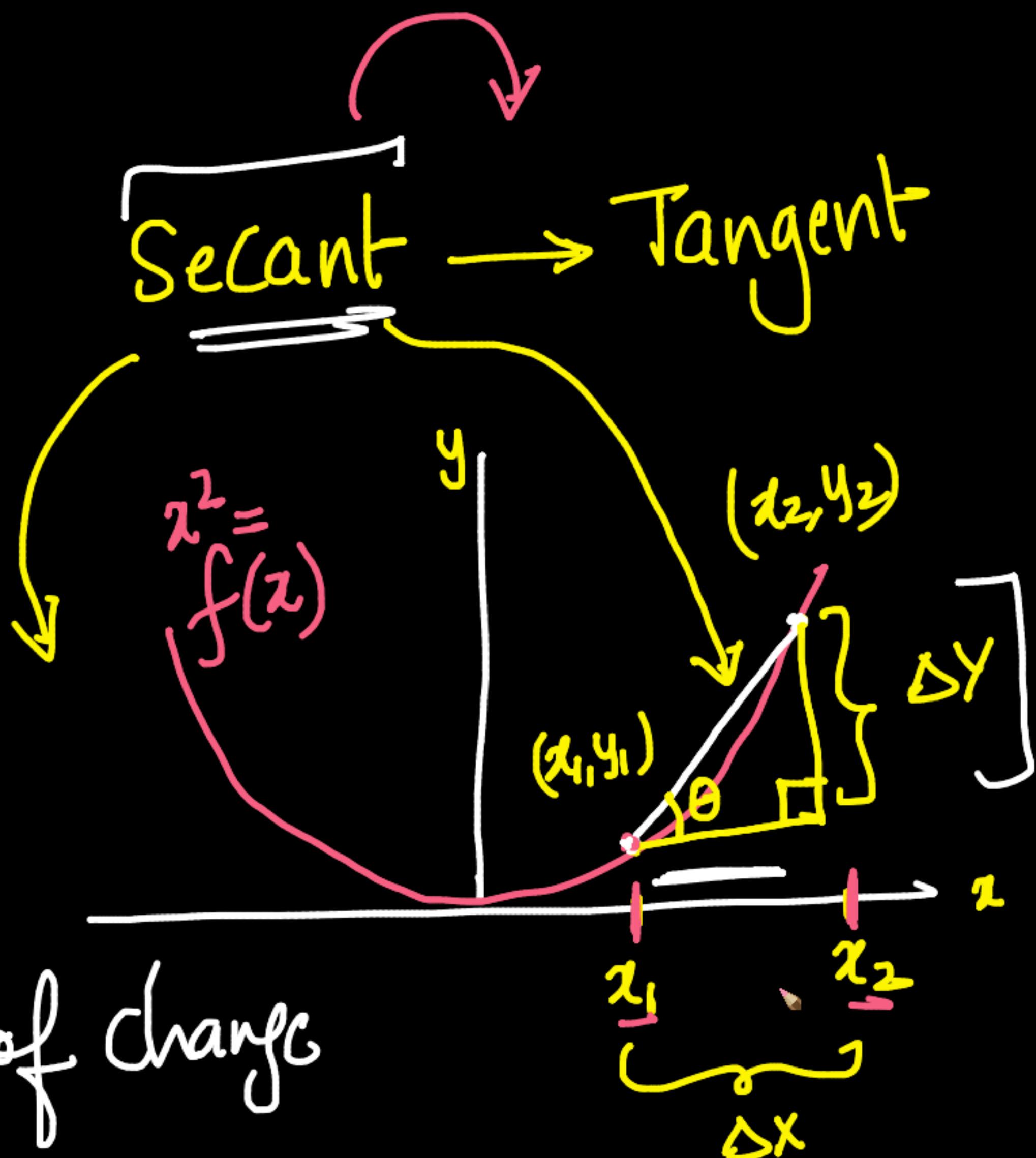
incr. faster than @ $x=a_2$

@ $x=a_1$







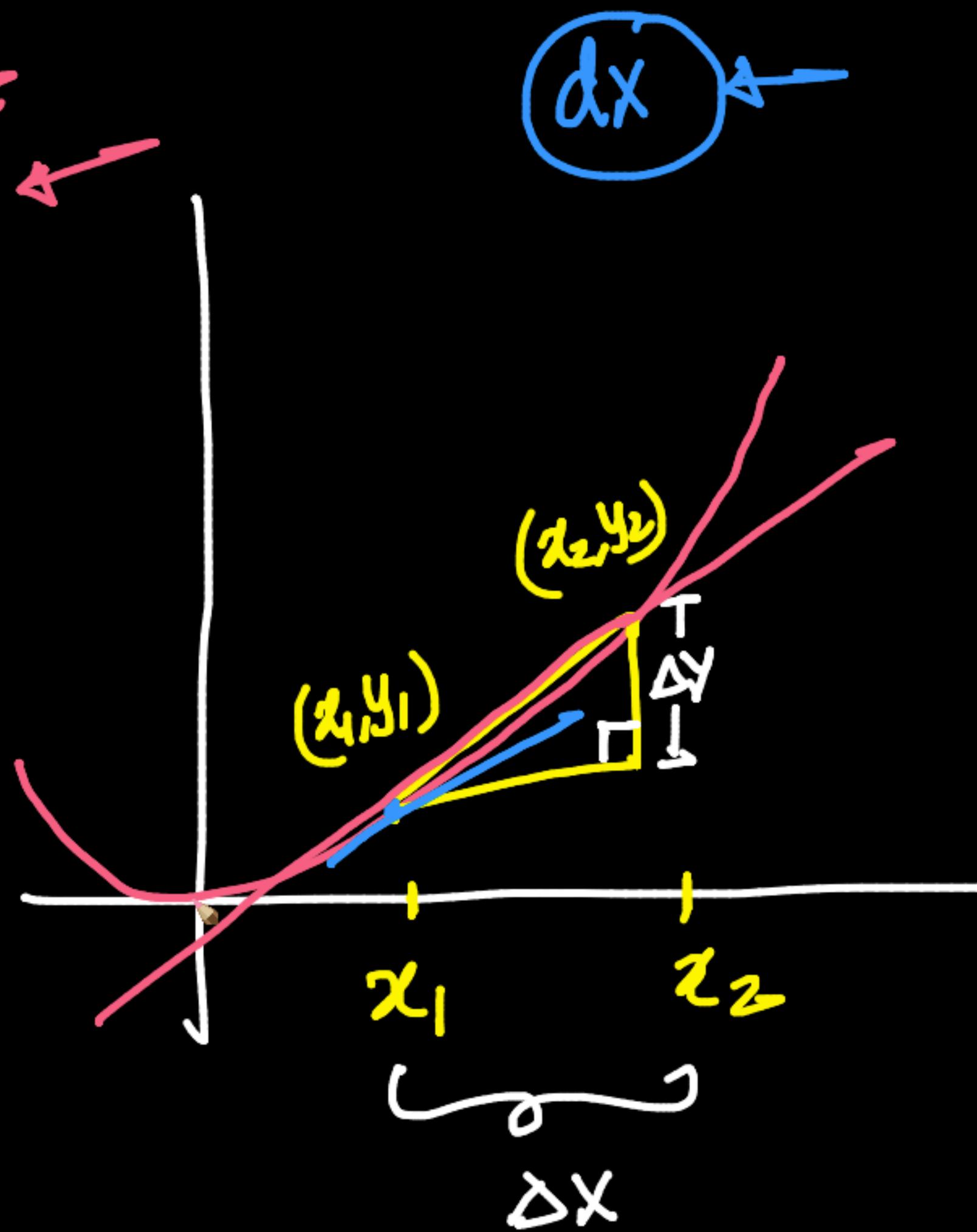


How to compute the slope geom without using $\tan(\theta)$

$$\begin{aligned}\Delta x &= x_2 - x_1 \\ \Delta y &= y_2 - y_1 \\ \tan \theta &= \frac{\Delta y}{\Delta x} \\ &= \frac{y_2 - y_1}{x_2 - x_1}\end{aligned}$$

Slope of Secant

{ Leibnitz
Newton }



x_2 closer to x_1

as $\Delta x \rightarrow 0$

L'huil's

{ Secant @ x_1 & $x_1 + dx$
||
Tangent @ x_1

Slope of the tangent:

$$\frac{df(x)}{dx} \Big|_{x=x_1} =$$

$$\frac{f(x_1 + \Delta x) - f(x_1)}{\Delta x}$$

$$\frac{y_2 - y_1}{(x_1 + \Delta x) - x_1}$$

$$\lim_{\Delta x \rightarrow 0} \frac{f(x_1 + \Delta x) - f(x_1)}{(x_1 + \Delta x) - x_1}$$

Tangent
↑ $\Delta x \rightarrow 0$
Secant

$$\frac{d f(x)}{dx} \Big|_{x=x_1}$$

$$x = x_1$$

$$= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

rate of change of $f(x)$ around $x = x_1$

$$x = x_1$$

$$\begin{cases} \text{Vel} = \text{r.c. of disp} \\ \text{acc} = \text{r.c. of vel} \end{cases}$$

Defn

$$\frac{d \tilde{f}(x)}{dx} = \tilde{g}(x)$$

$$\left. \frac{df(x)}{dx} \right|_{x=a} = \text{numerical}$$

$$\left\{ \begin{array}{l} \frac{d}{dx} x^3 = 3x^2 \\ \quad \quad \quad \uparrow \\ \quad \quad \quad x=1 \end{array} \right.$$

$$\left. \frac{dx^3}{dx} \right|_{x=1} = 3^{\swarrow}$$

$$\checkmark \quad \frac{d x^2}{d x} = \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

Secant
to tangent

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

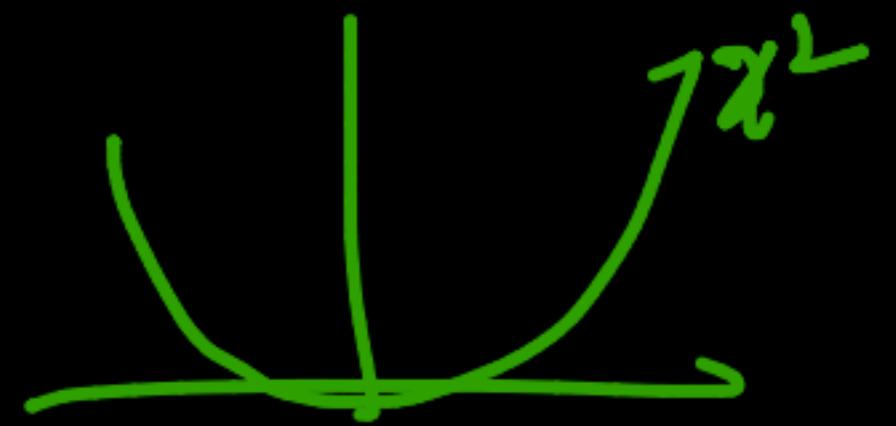
$$\lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^2 - x^2}{\Delta x} = \frac{2x \cdot \Delta x + \Delta x^2}{\Delta x}$$

$$\left\{ \begin{array}{l} \lim_{\Delta x \rightarrow 0} (2x + \cancel{\Delta x}) \\ \Delta x \rightarrow 0 \end{array} \right.$$

2x

alg-formula

$$\left\{ \begin{array}{l} f(x) \\ g(x) \\ \frac{d}{dx} x^2 = 2x \\ \uparrow \\ x=4 \end{array} \right.$$



$$\left. \frac{d}{dx} x^4 \right|_{x=4} = 2x^3 \circled{8}$$

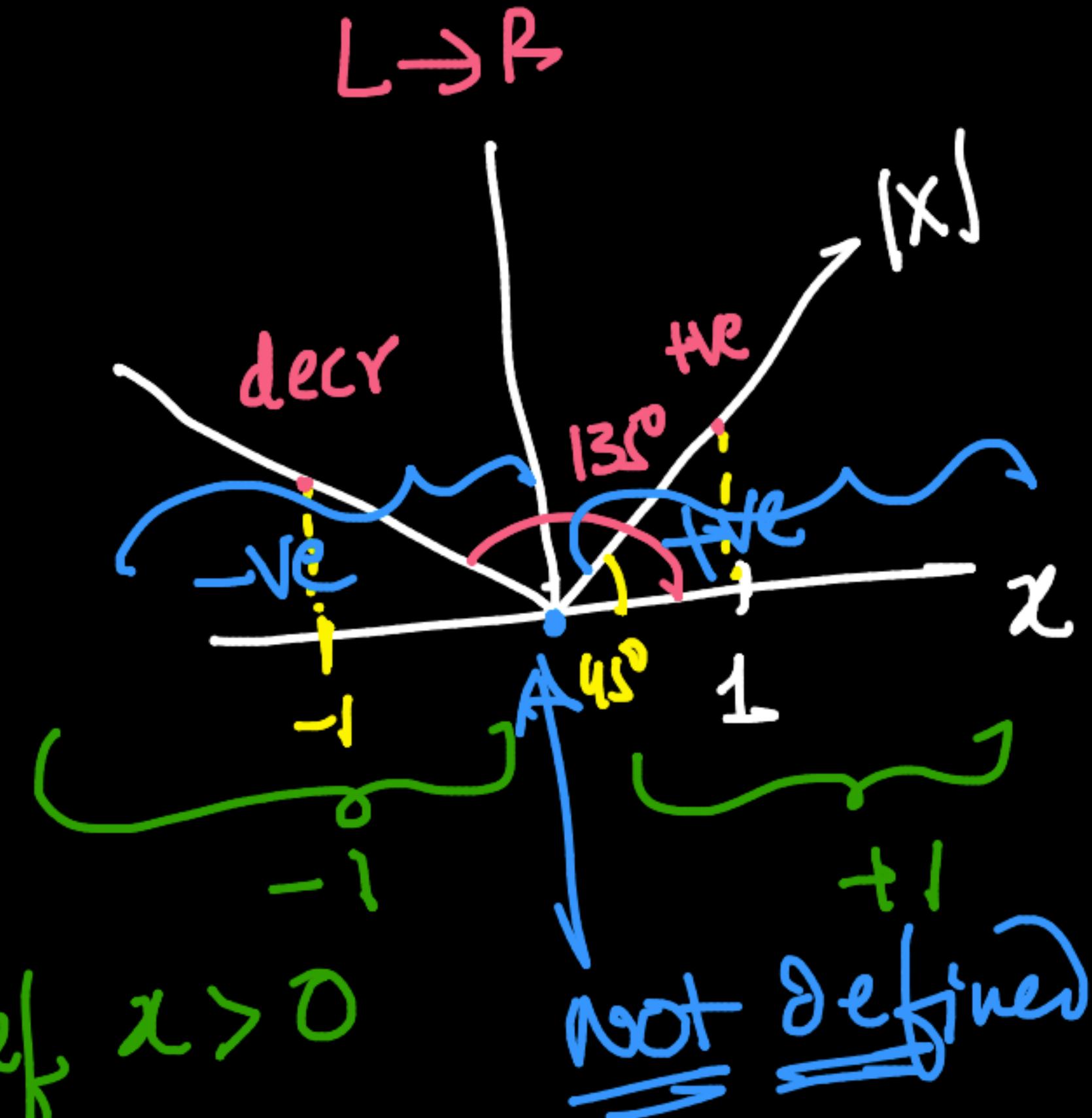


$$\sqrt{\left[\frac{d}{dx} |x| \right]_{x=1}} = 1$$

Math

$$\frac{d}{dx} |x| \Big|_{x=0}$$

$$|x| = \begin{cases} x & \text{if } x > 0 \\ -x & \text{if } x < 0 \\ 0 & \text{if } x = 0 \end{cases}$$



$$\frac{d|x|}{dx} = \lim_{\Delta x \rightarrow 0}$$

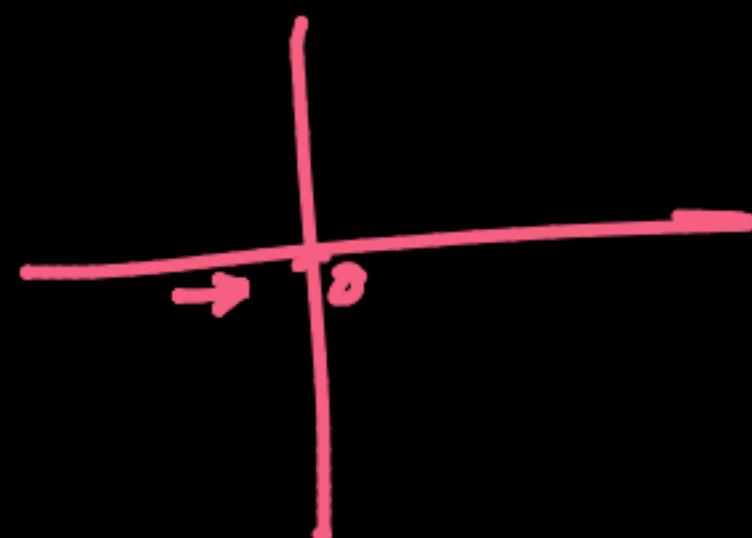
$$\frac{|x+\Delta x| - |x|}{\Delta x}$$

$\delta x \rightarrow 0$
secant-tangent

{ Case 1: $x \geq 0$ } $\rightarrow \frac{x+\Delta x - x}{\Delta x} = 1$

Case 2: $x < 0$ $\rightarrow \lim_{\Delta x \rightarrow 0} \frac{-(x+\Delta x) - (-x)}{\Delta x} = \lim_{\Delta x \rightarrow 0} \frac{-\Delta x}{\Delta x} = -1$

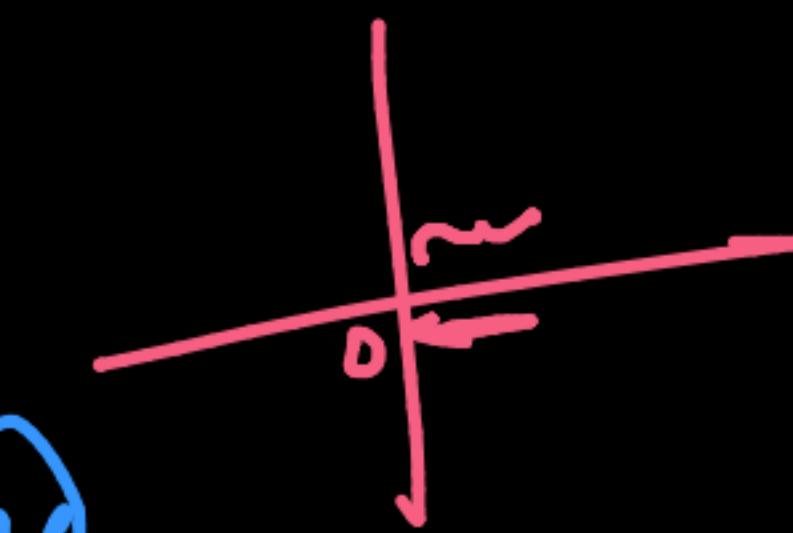
Case 3: $x=0$



$$\lim_{\Delta x \rightarrow 0} \frac{|x + \Delta x| - |x|}{\Delta x}$$

$$= \lim_{\Delta x \rightarrow 0} \frac{|\Delta x|}{\Delta x}$$

NOT defined



$$\lim_{\Delta x \rightarrow 0^-} \frac{|\Delta x|}{\Delta x}$$

$$= -\frac{\Delta x}{\Delta x} = -1$$

$$\lim_{\Delta x \rightarrow 0^+} \frac{|\Delta x|}{\Delta x}$$

$$= \frac{\Delta x}{\Delta x} = 1$$

$$\left\{ \begin{array}{l} \frac{d x^2}{d x} = 2x \\ \frac{d |x|}{d x} = \begin{cases} + & \text{if } x > 0 \\ - & \text{if } x < 0 \\ \text{ND} & \text{if } x = 0 \end{cases} \end{array} \right.$$

Secant-Tangent
 $\Delta x \rightarrow 0$

Common-derivatives:

$$\checkmark \frac{d}{dx} x^n = nx^{n-1} ; n \neq 0; \quad n : \text{rational number}$$

$$\frac{d}{dx} x^{\underline{n}} = \underline{nx^{n-1}}$$

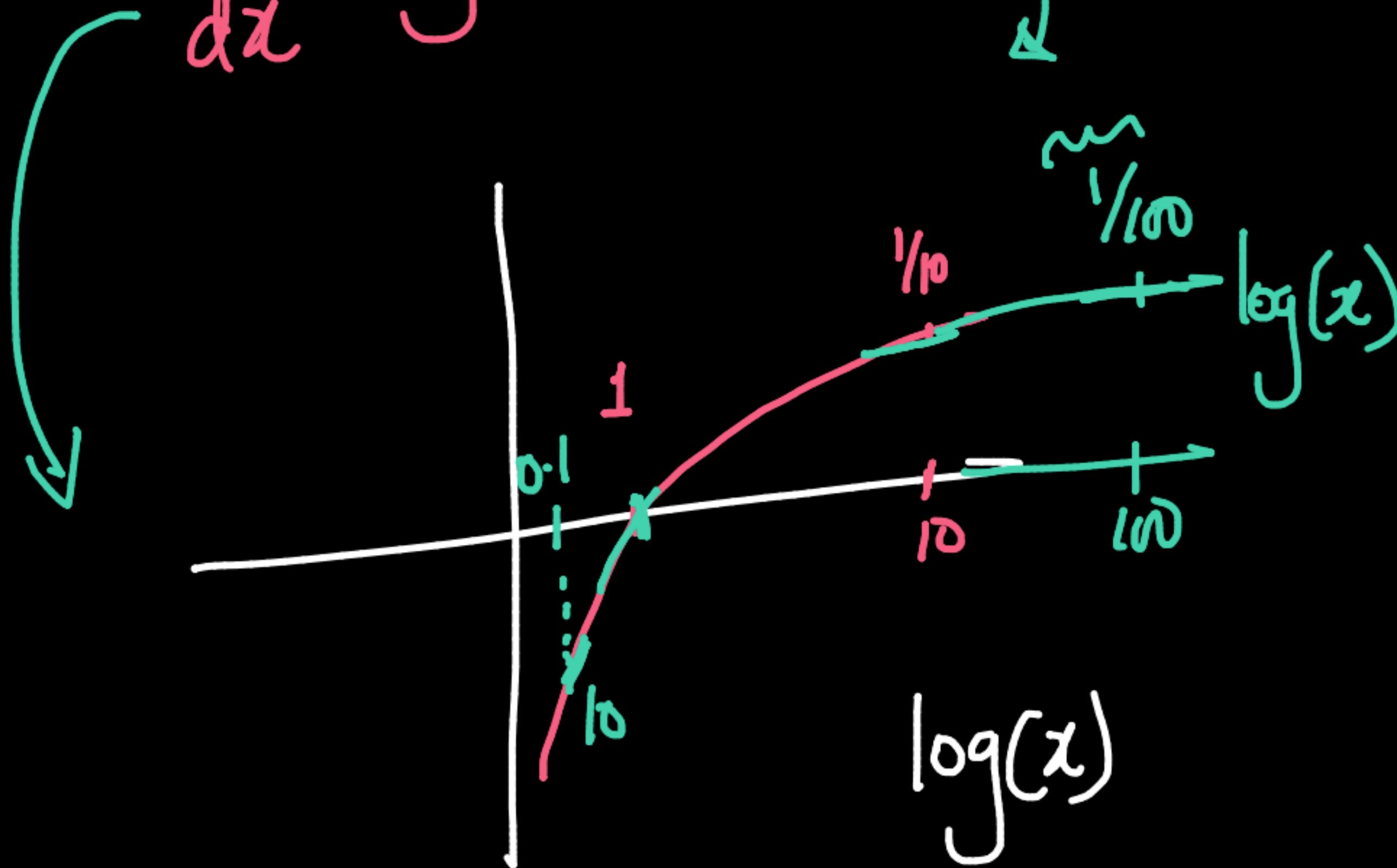
$$\frac{d}{dx} x^3 = 3x^2$$

$$\frac{d}{dx} x^{2.5} = 2.5 \underline{x^{1.5}}$$

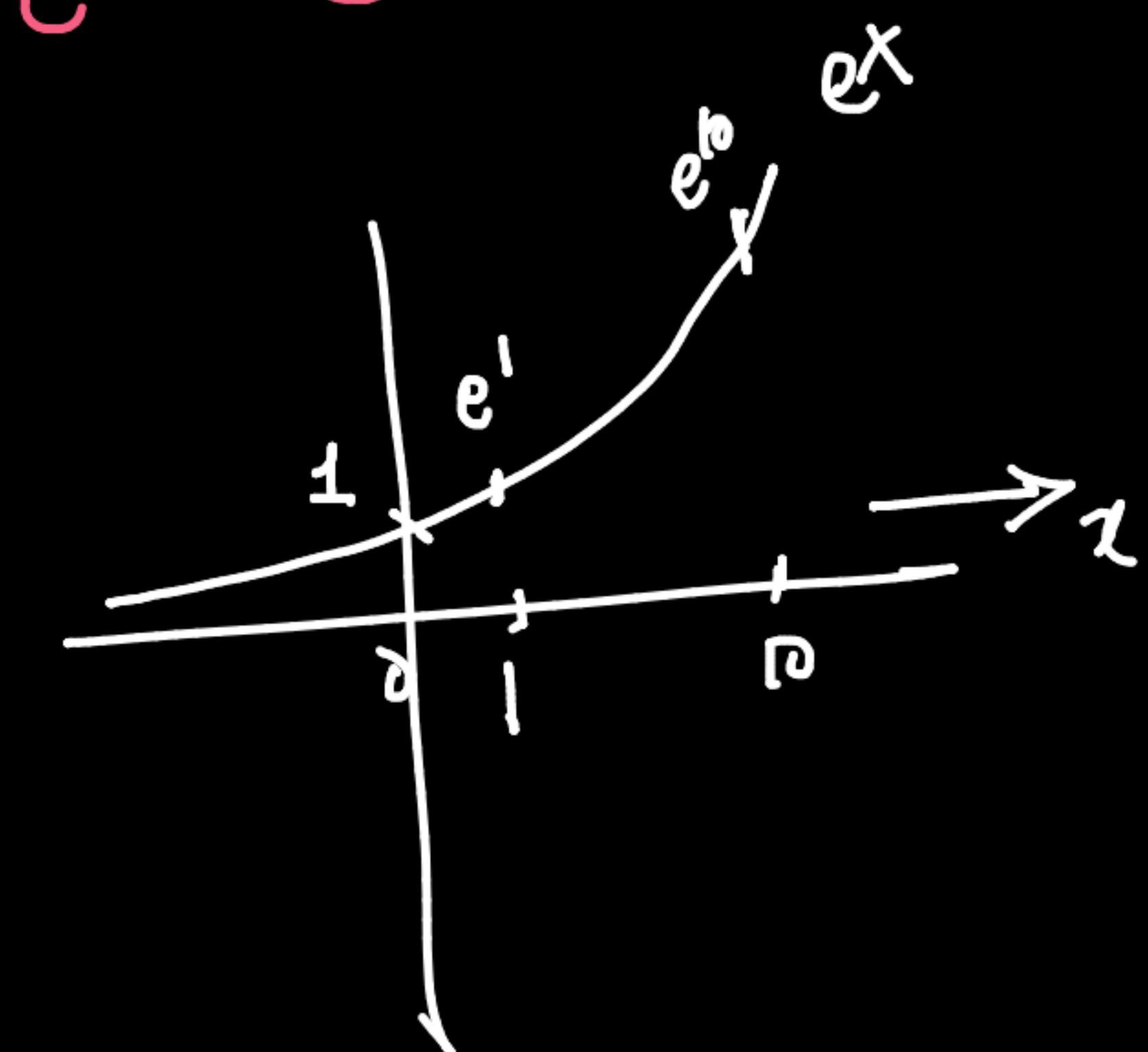
$$\checkmark \left\{ \frac{d}{dx} \sqrt{x} = \frac{d}{dx} x^{\frac{1}{2}} = \frac{1}{2} x^{-\frac{1}{2}}$$

$$\lim_{x \rightarrow \infty} \frac{1}{x} = 0$$

$$\frac{d}{dx} \log(x) = \frac{1}{x}$$

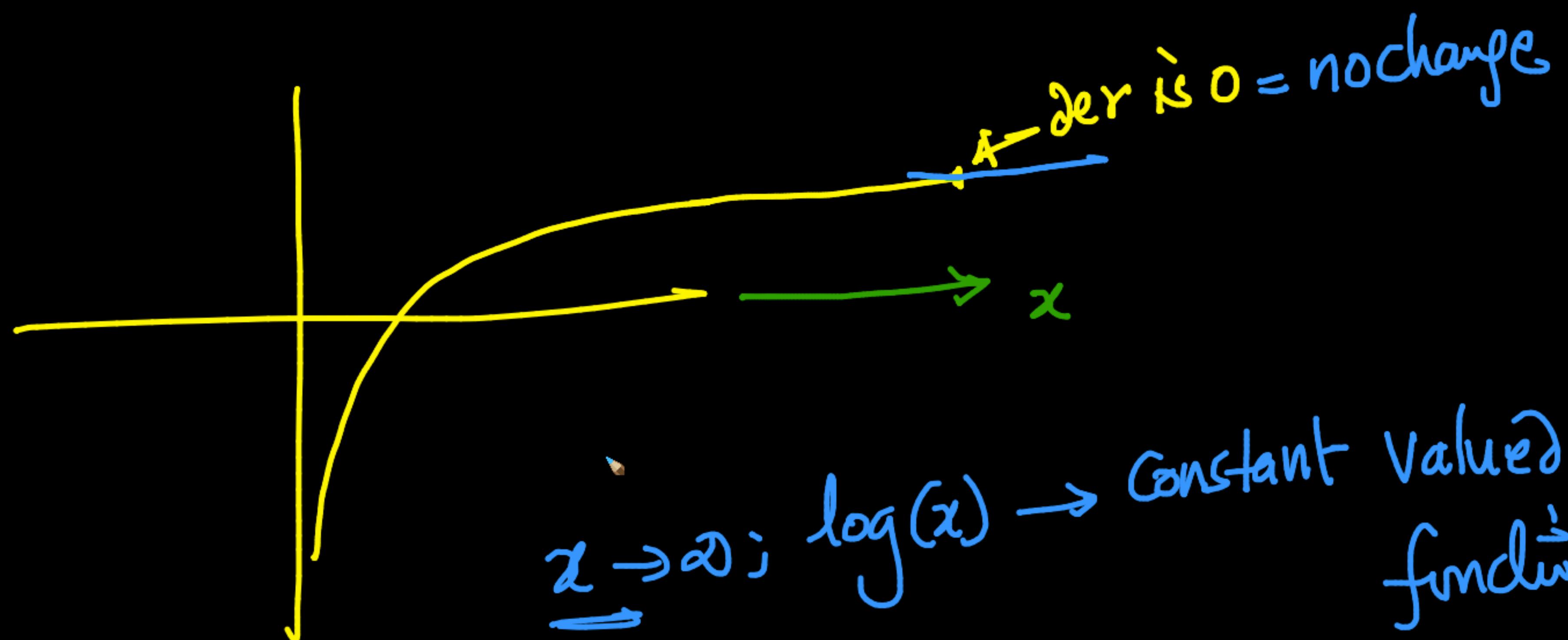


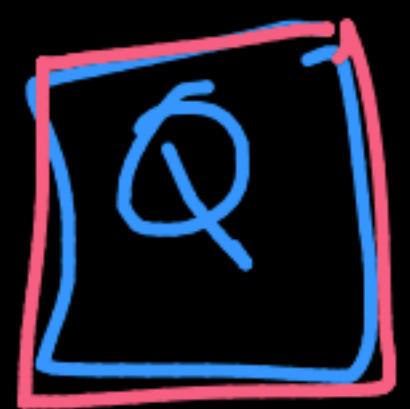
$$\frac{d}{dx} e^x = e^x$$



$$\frac{d}{dx} \log(x) = \frac{1}{x}$$

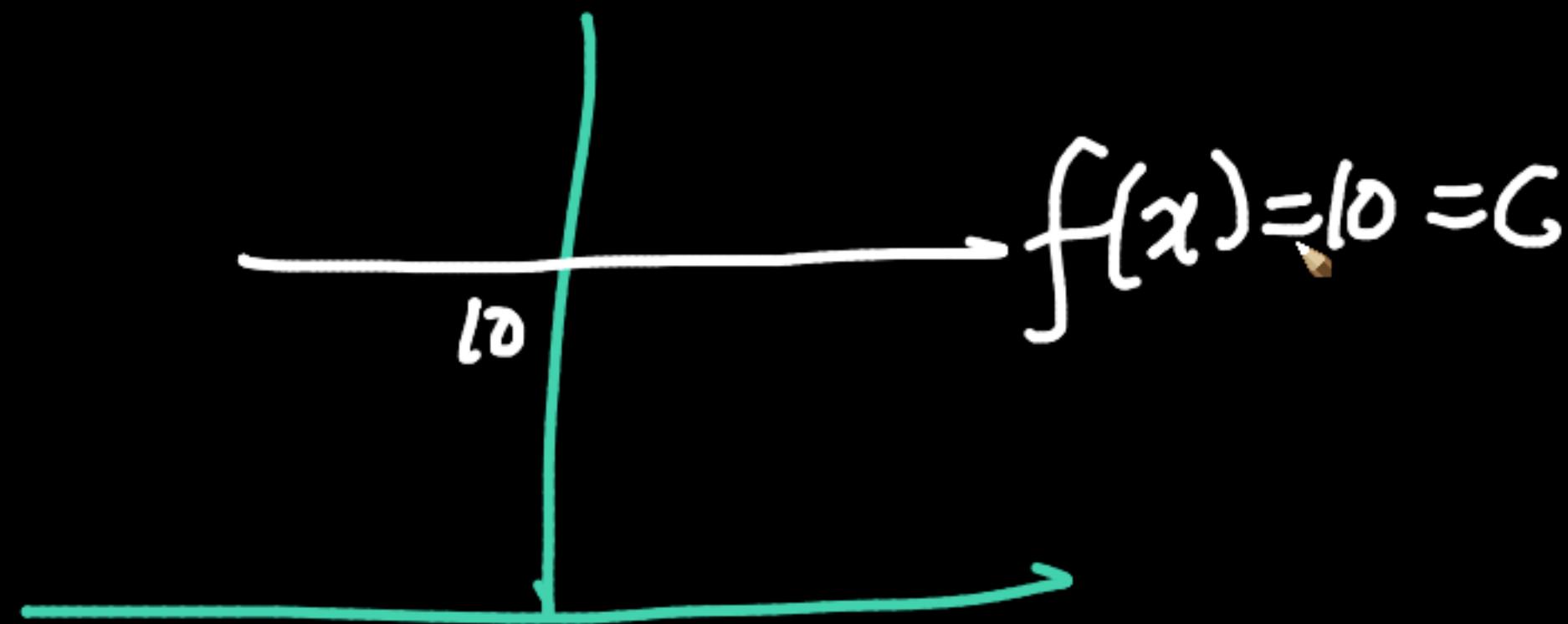
$$\lim_{x \rightarrow \infty} \frac{1}{x} = 0$$





$$\frac{dC}{dx} \xrightarrow{\text{constant}} = 0$$

$$f(x) = C = 10 \quad (\text{let})$$





code

def f(x):
{
 return

$$\frac{df(x)}{dx} \Big|_{x=a}$$

def compDerf(@)
=====
return

Task:

$$\frac{df}{dx} \Big|_{x=a} = \lim_{\Delta x \rightarrow 0} \frac{f(\tilde{a} + \Delta x) - f(\tilde{a})}{\Delta x}$$

Input

$\delta x = 0.00000$

You have left the meeting

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