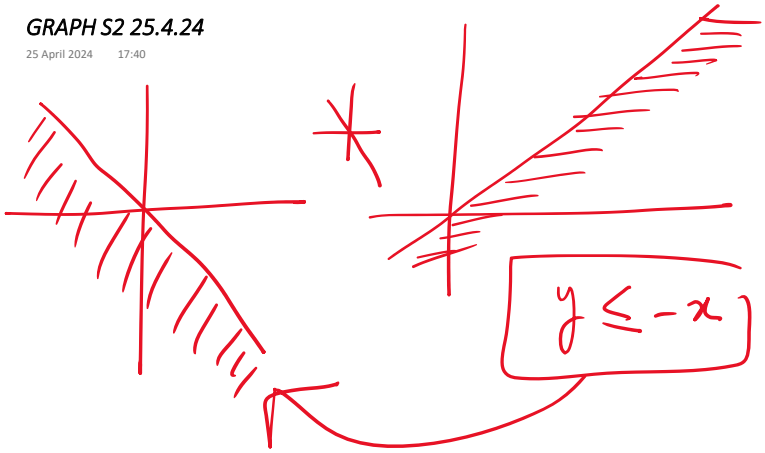
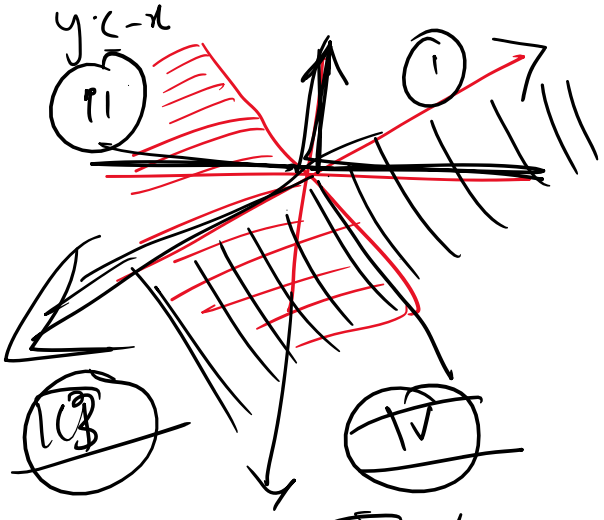
GRAPH S2 25.4.24

25 April 2024 17:40





II & IV

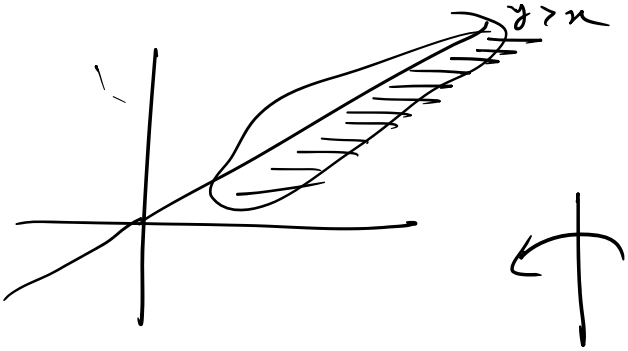
$y \geq x$ $\quad |y| \geq |x|$

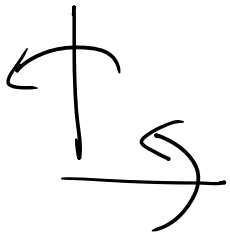
$\geq$ Right / Above

$\leq$ Left / Below

$y > x$

$y \geq x$

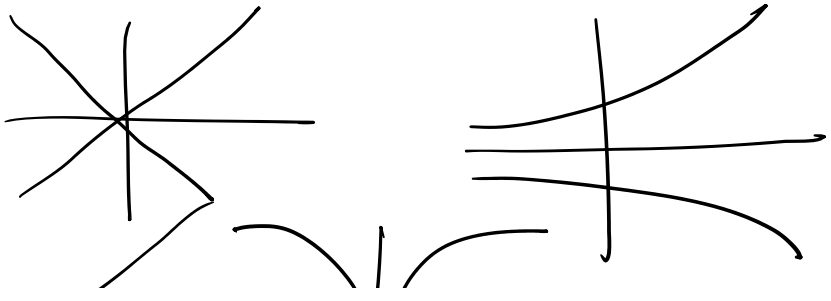


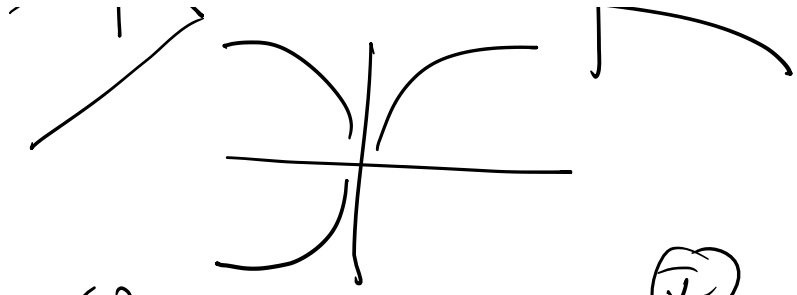


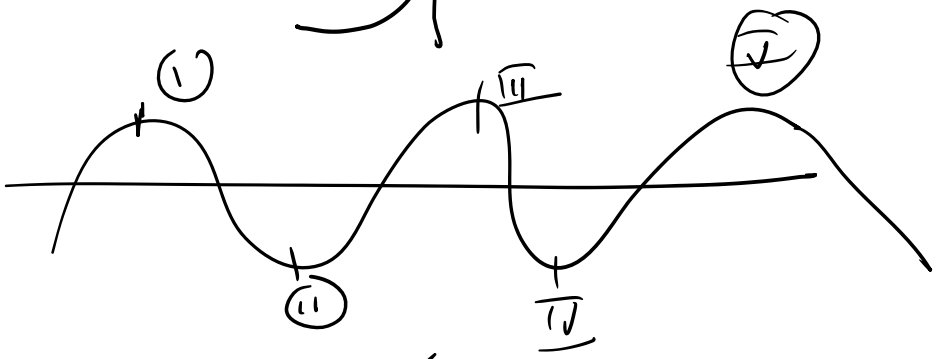
$f(x) \to f(-x)$

$f(x) \to -f(x)$

$f(x) \to -f(-x)$

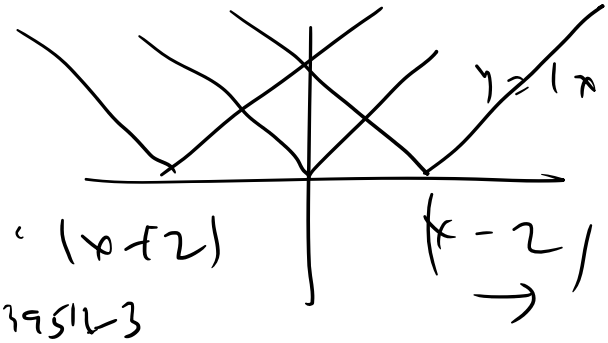






$y = x^6 + \dots\dots$

Bending point +1 = Highest Power



$y = |x-2|$

$y = 0 \quad x = 2$

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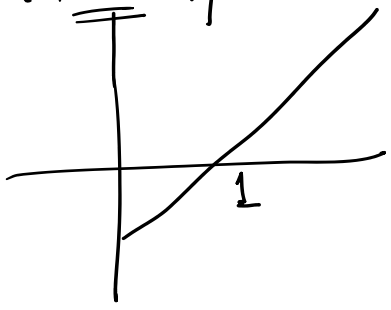
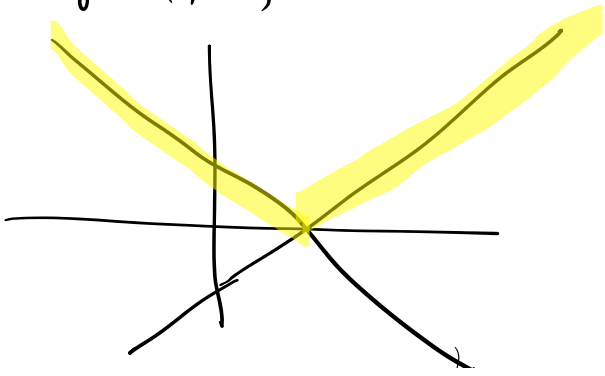
CMI

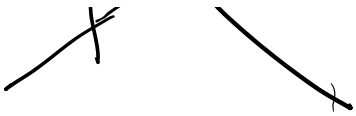
$y = |1 - |x-1||$

Step:1 $y = x-1$

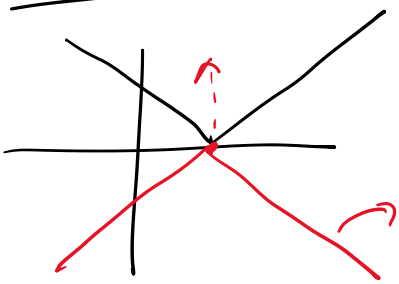


Step:2 $y = |x-1|$



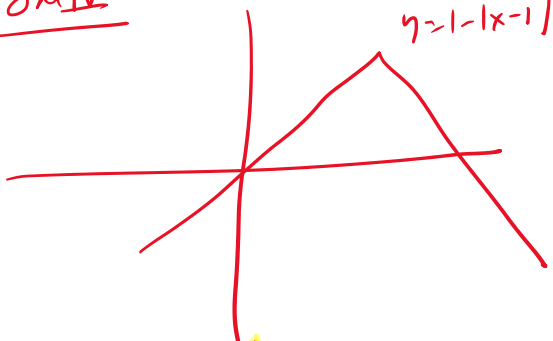


Step III



$y=-|x-1|$

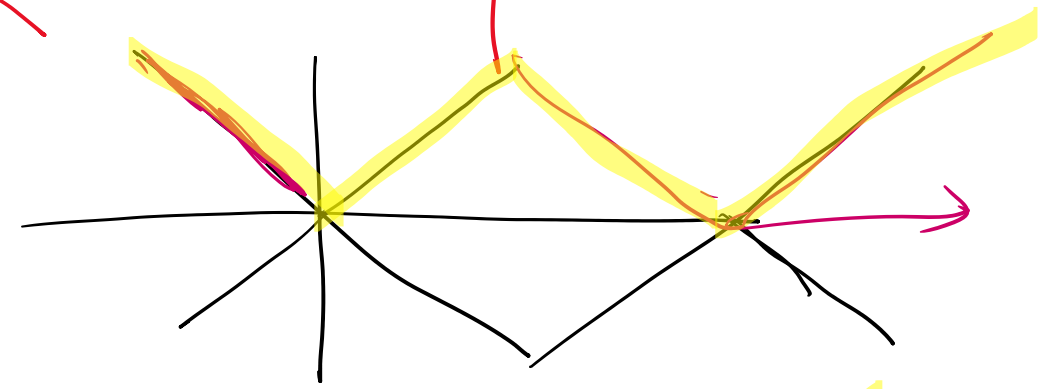
Step IV



$y=1-|x-1|$

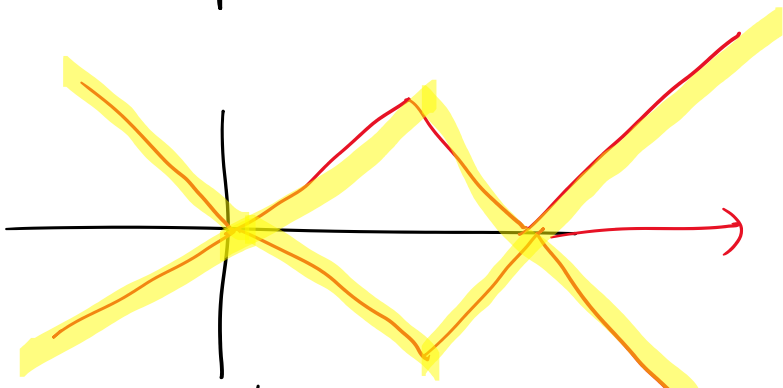
Step V

$y=|1-|x-1||$



Second Case

$|y|=|1-|x-1||$

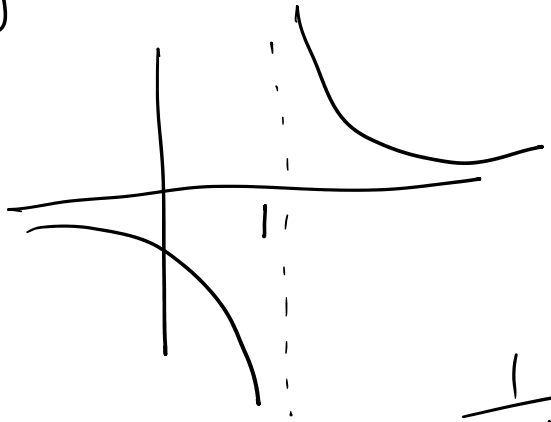


Ques Draw $y=2-\frac{1}{|x-1|}$

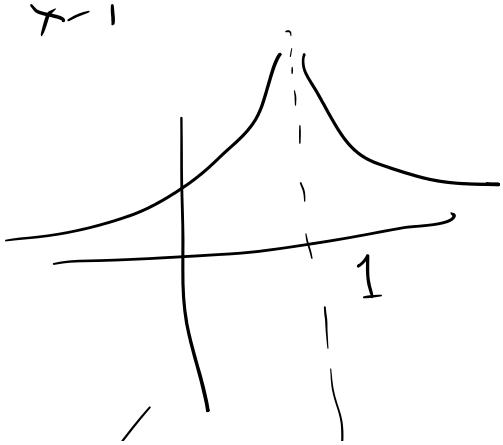
Step: 1

We [Q1, Q3]

$y=\frac{1}{x} \rightarrow y=\frac{1}{x-1}$



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



Step: 2

$y=\frac{1}{|x-1|}$

Step: 2 $y = |x-1|$

Step I $y = \frac{1}{x}$

$xy = 1$

$-x(-y) = 1$

$(-x, -y)$

Step III

$y = -\frac{1}{|x-1|}$

Step IV

Sharpen upward

$y = 2 - \frac{1}{|x-1|}$

Test of Marks (Advanced Level)

$|x+y| \geq 1$

$x+y \geq 1$

$x+y \leq -1$

$x+y \geq 1$

$x+y \leq -1$

No Common Zone

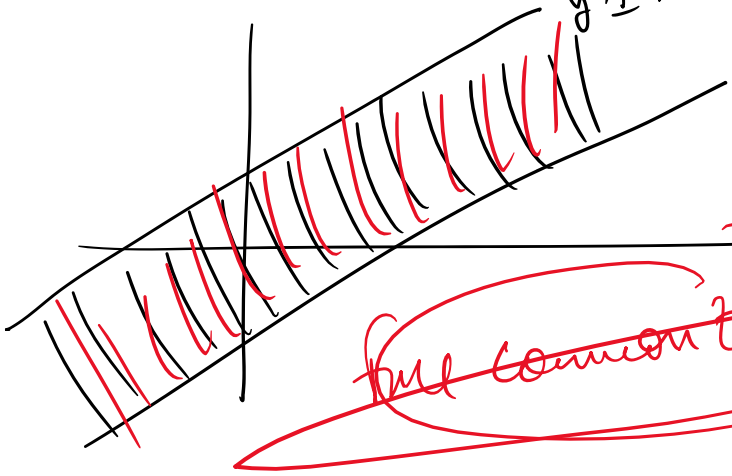
8 $|x-y| \leq 1$

$-1 \leq x-y \leq 1$

$-1-x \leq -y \leq 1-x$

$x+1 \geq y \geq x$

$x-1 \leq y \leq x+1$



$y \leq x+1$

Towards origin

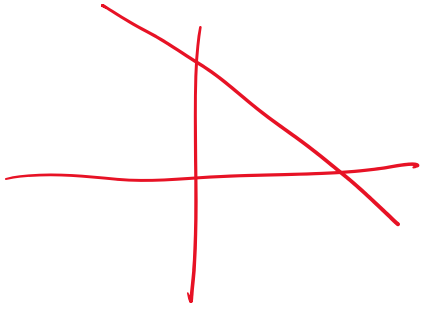
Common Zone

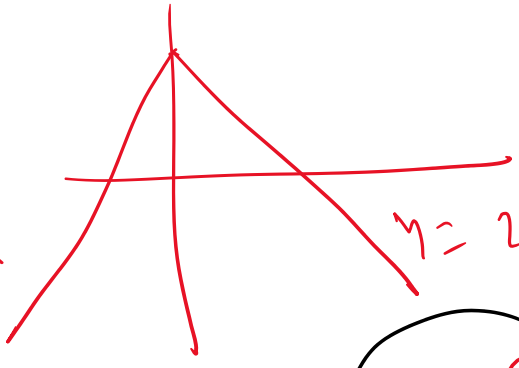
$x-1 \leq y$

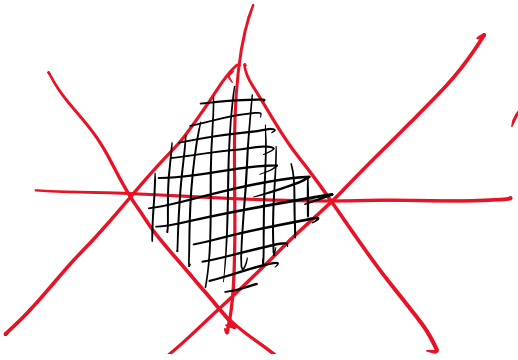
$y \geq x-1$

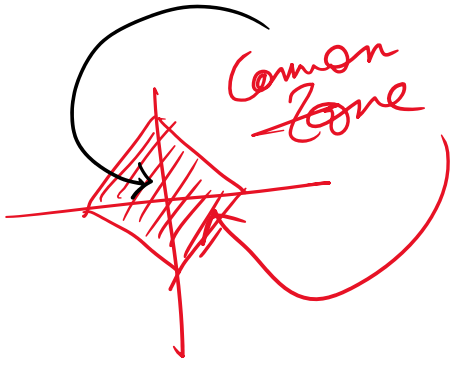
9 $|x|+|y| \leq 2$

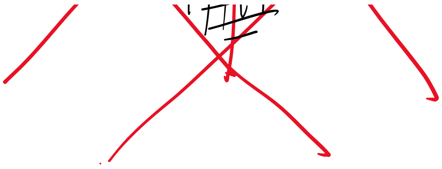
$|y| = 2-|x|$











Q Note: f is written as less or equally.. Remember | | →

A $|x+y| + |x-y| \le 4$ ✓

B $|x+y| - |x-y| \ge 4$ ✓

C $||x-y| + |x-y|| \ge 4$

D $|x-y| \pm |x-y| \le 4$

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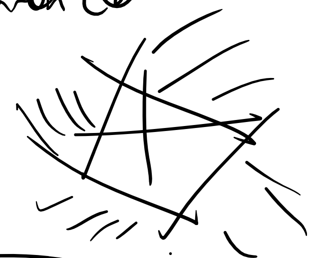
$x+y+x-y=4$

$2x=4$

$x=2$

Commonsense (≤)



Domain vs Range

Dependent variables ← $y = 2x+3$ → independent variables

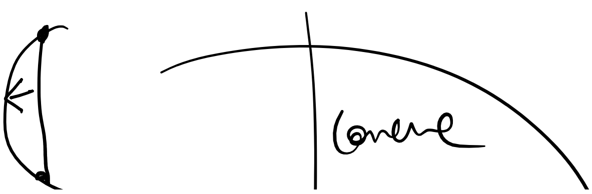
Domain: $0 \le x \le 2$

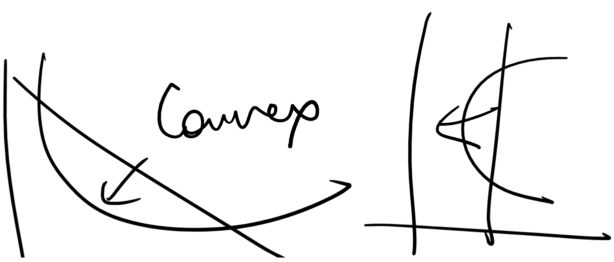
Range: $3 \le y \le 7$

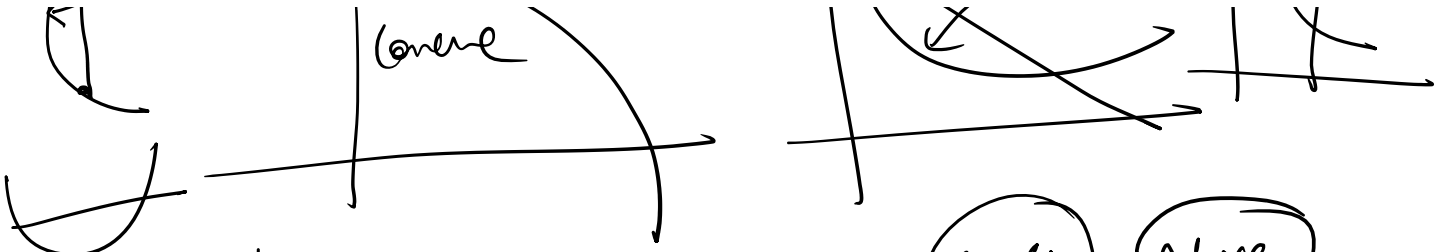
$y|_{x=0} = 3$

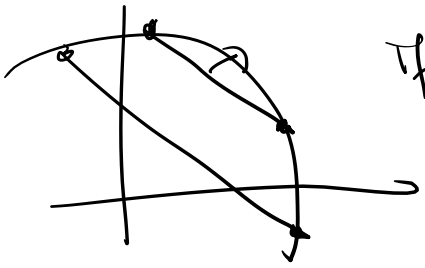
$y|_{x=2} = 7$

Concave vs Convex



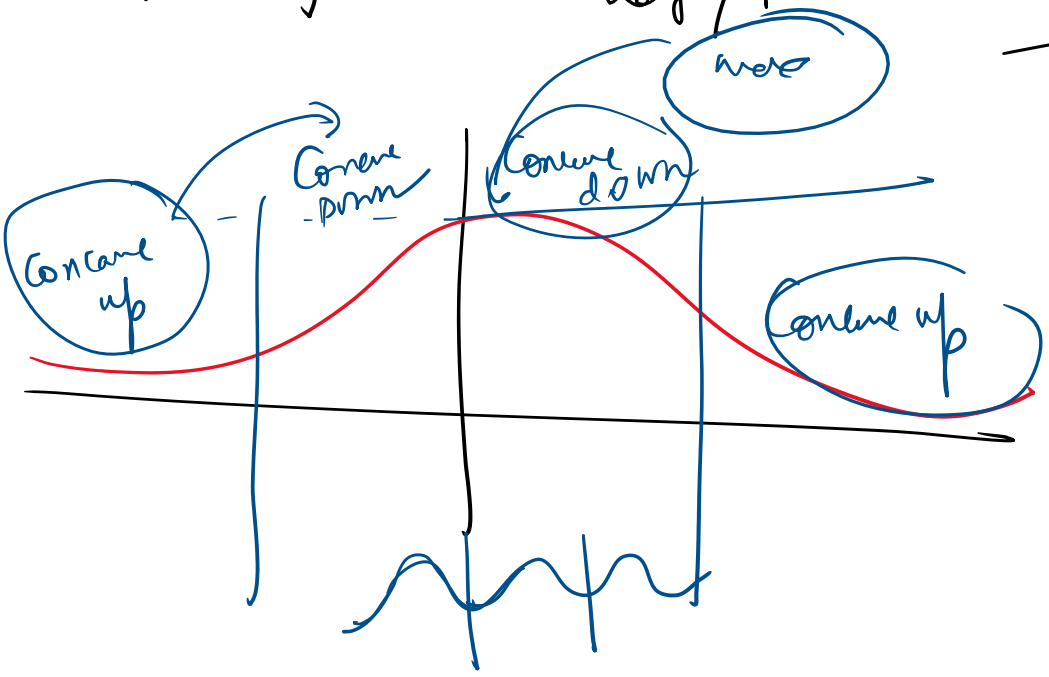


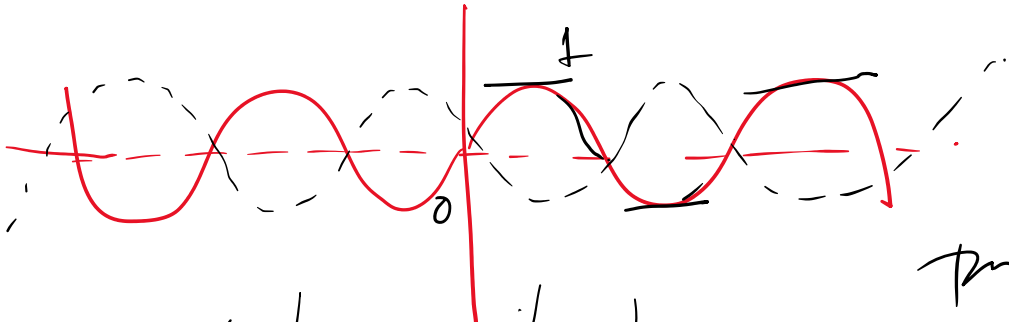




If graph is to the Right or Above
Concave

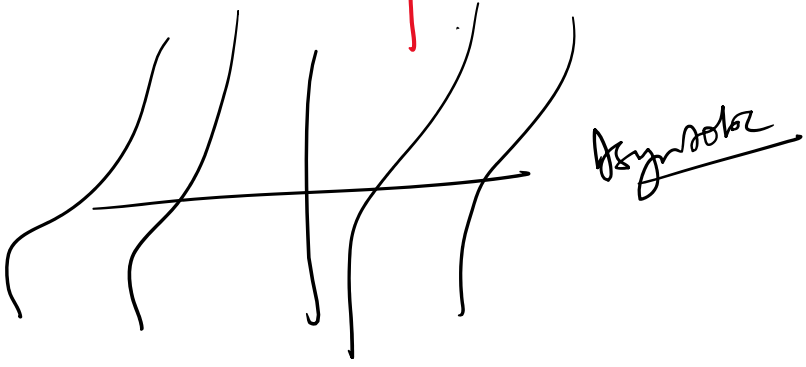
Left / below → Convex





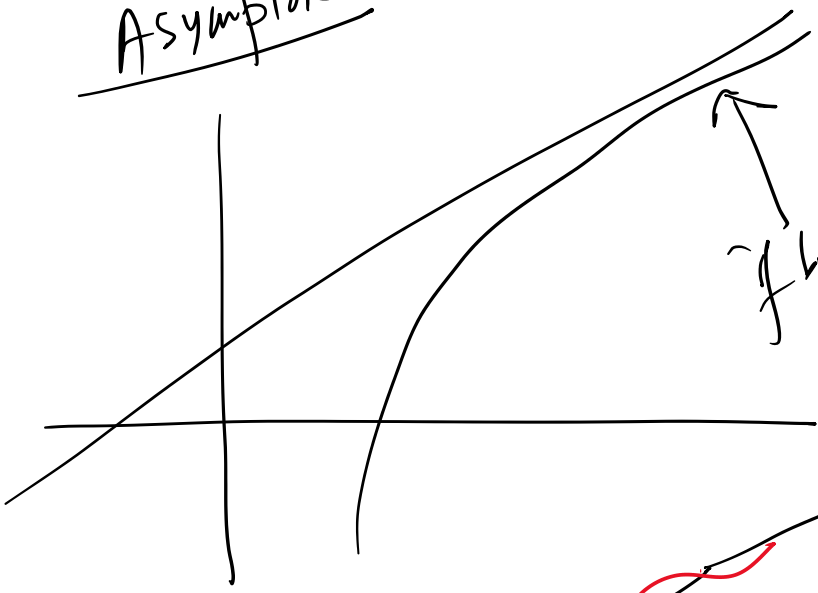
$\tan\frac{\pi}{2} = \frac{\sin \pi/2}{\cos \pi/2} = \frac{1}{0}$

VD

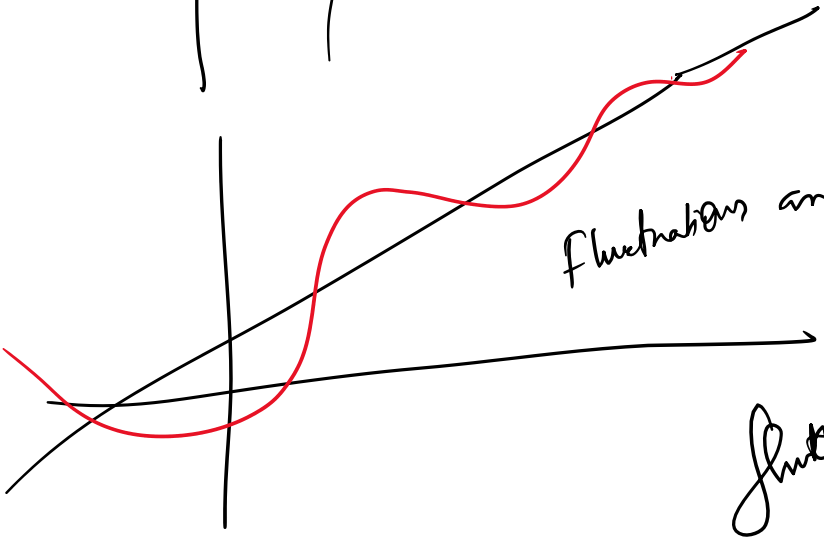


Asymptote

Asymptote



If both the curve & the line expanded till ∞ then they will touch somewhere out.



Fluctuations are falling @ every step

& Lower fluctuations happen at ∞