

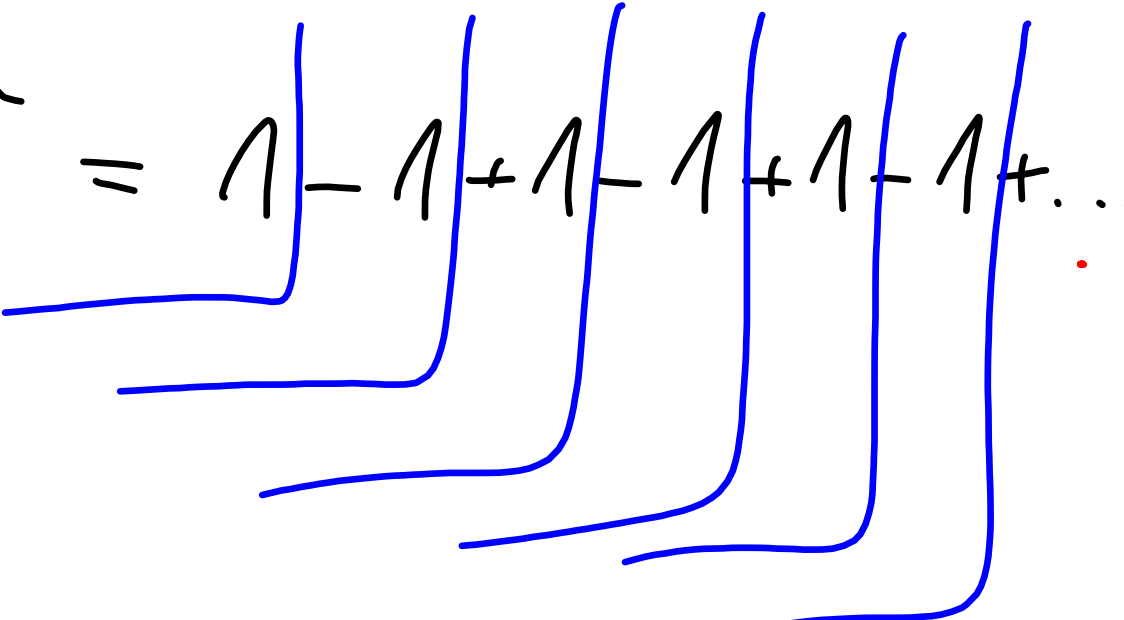
$$\sum_{n=1}^{\infty} \frac{1}{n} = \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots$$

Handwritten diagram illustrating the partial sums of the harmonic series:

- $S_1$  is under  $\frac{1}{1}$
- $S_2$  is under  $\frac{1}{1} + \frac{1}{2}$
- $S_3$  is under  $\frac{1}{1} + \frac{1}{2} + \frac{1}{3}$
- $S_4$  is under  $\frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$



$$\sum \frac{1}{n} = \lim_{n \rightarrow \infty} S_n = \infty$$

$$\sum_{n=0}^{\infty} (-1)^n = 1 - 1 + 1 - 1 + 1 - 1 + \dots$$


$$1 - 1 + 1 - 1 + 1 - 1 + \dots$$

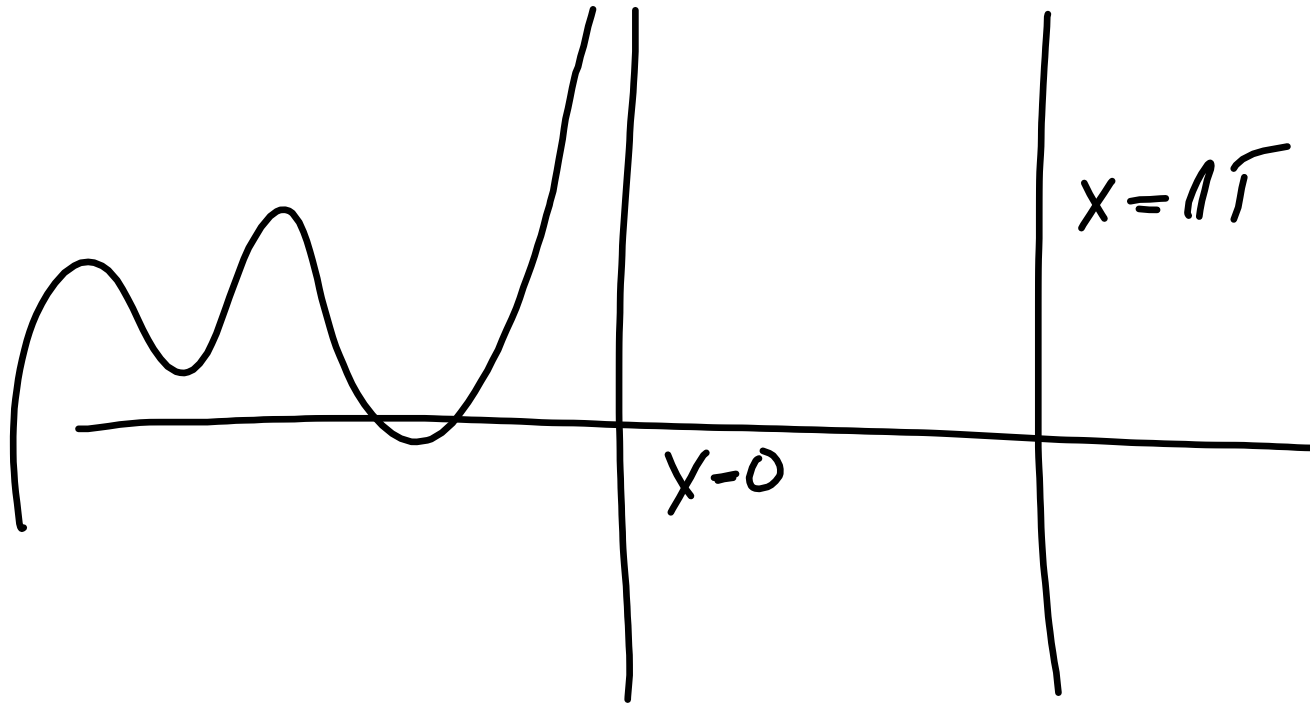
$$1 - 1 + 1 - 1 + 1 - 1 + \dots$$

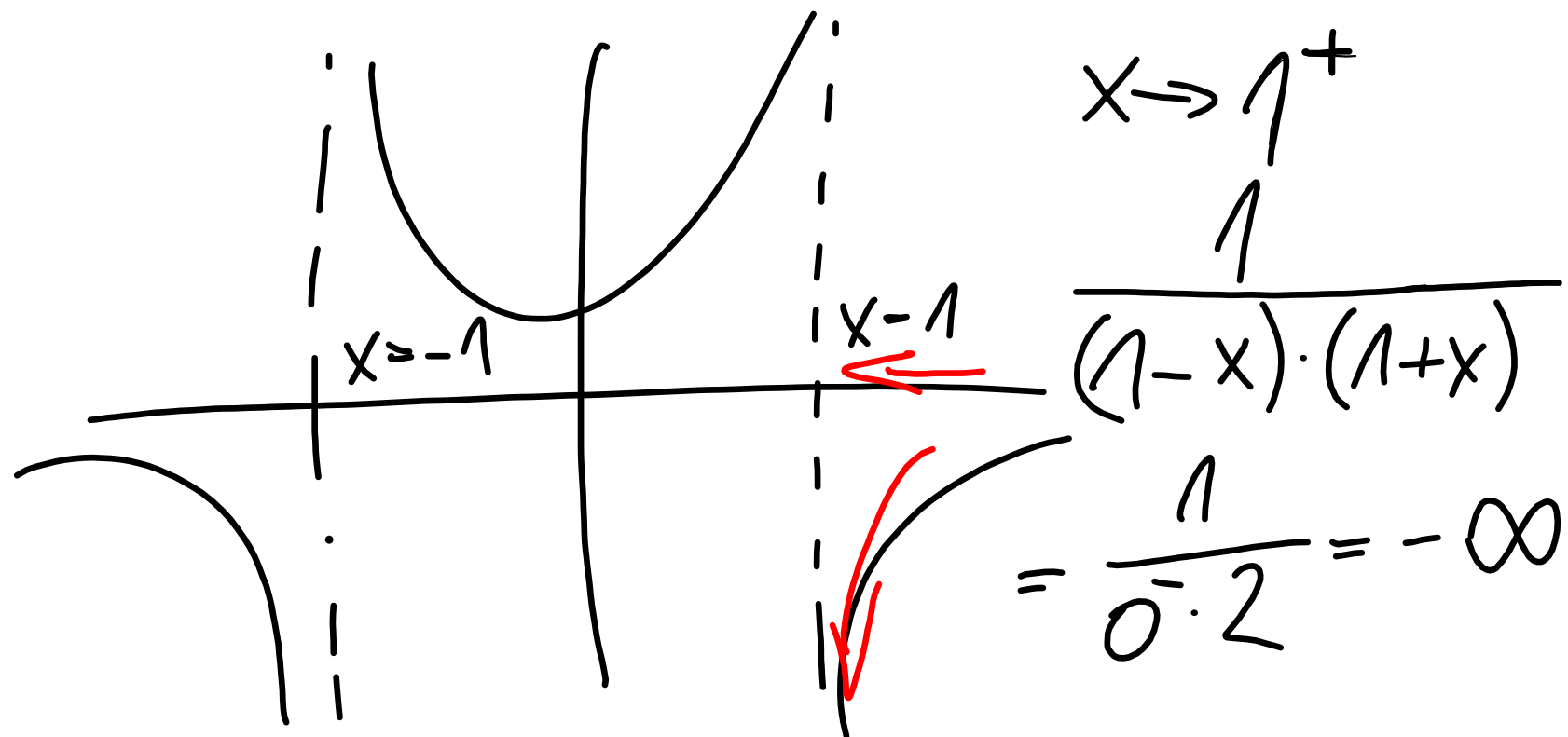
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$$1 + 0 + 0 + 0 + 0 + 0 + 0 + \dots = 1$$

$$\sum_{n=1}^{\infty} n = 1 + 2 + 3 + 4 + \dots = -\frac{1}{12}$$

The diagram shows the terms of the series  $1 + 2 + 3 + 4 + \dots$  with green brackets underneath each term. The brackets for 1, 2, and 3 are connected by a horizontal line. The bracket for 4 is connected to the next bracket, which is connected to an infinity symbol  $\infty$ , indicating the series continues infinitely.





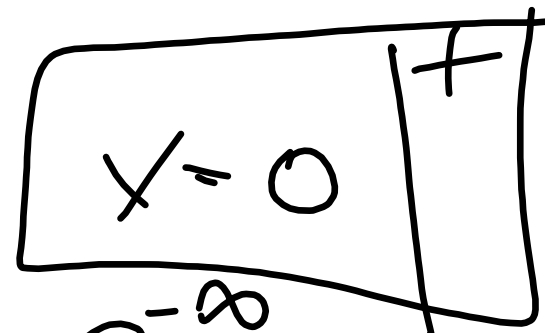
$$e^{\frac{1}{x}}$$

$$x \rightarrow 0^+$$

$$e^{\frac{1}{0^+}} = e^{\infty} = \infty$$

$$x \rightarrow 0^-$$

$$e^{\frac{1}{0^-}} = e^{-\infty} = 0$$

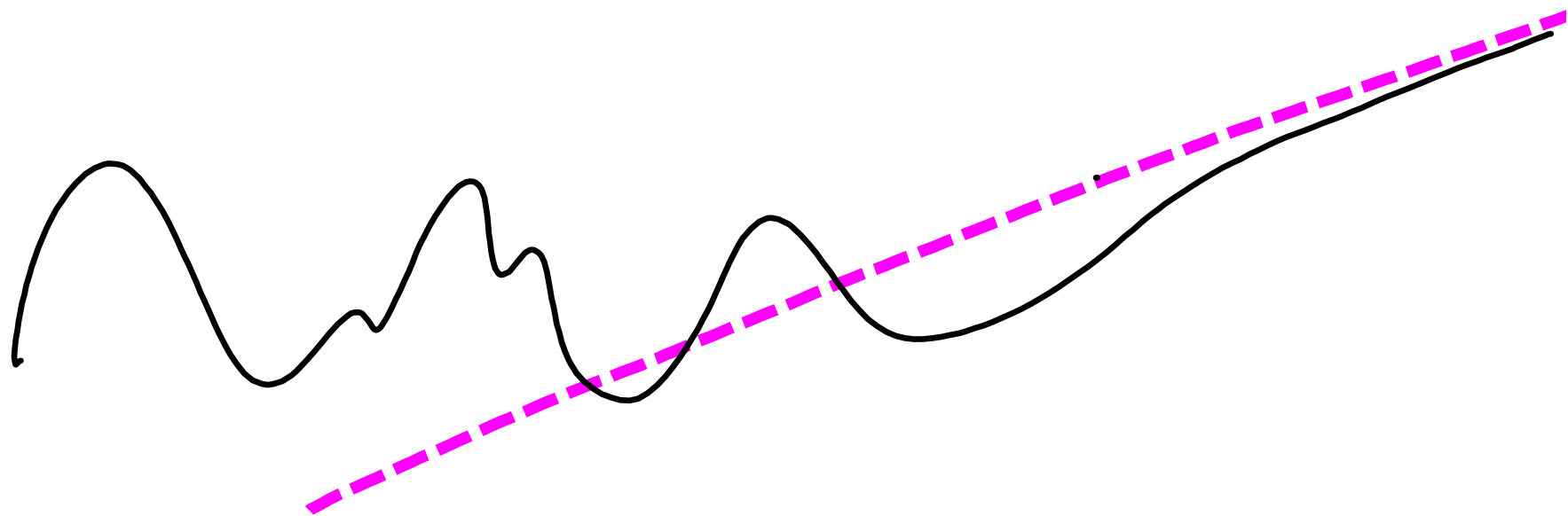


$$y = ax + \text{~~something~~}$$

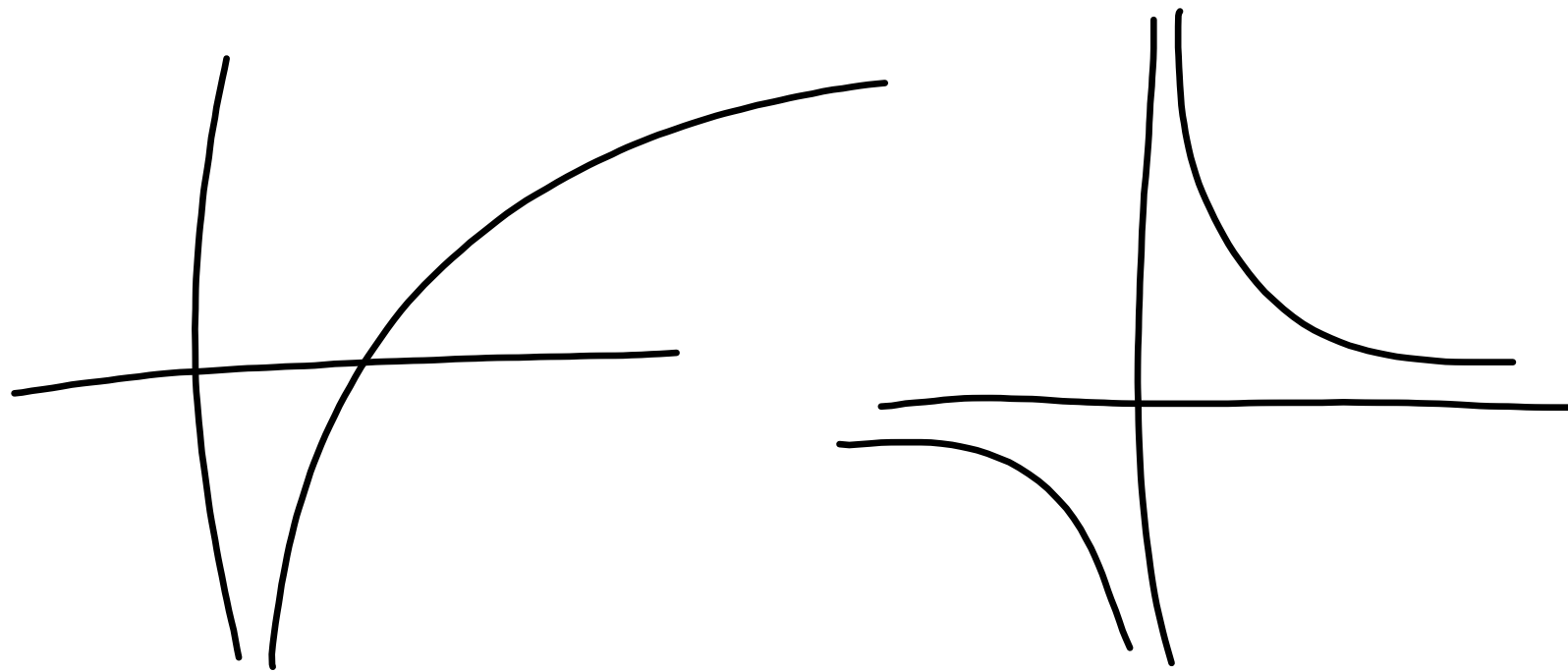
 $f(x)$ 

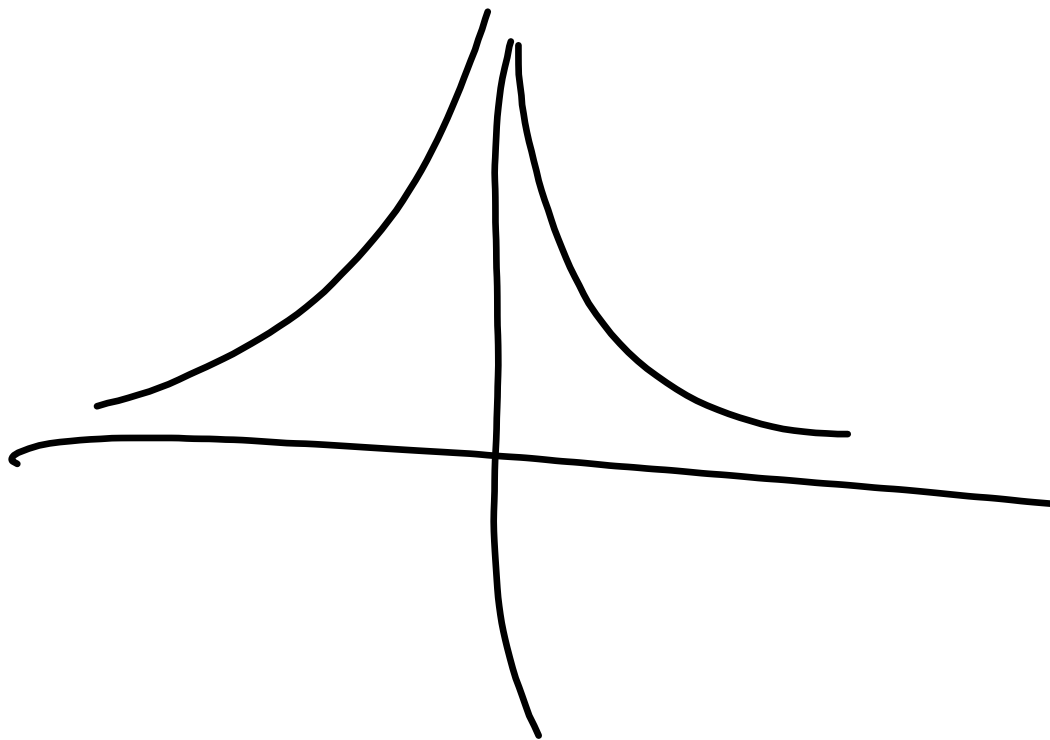
$$a = \frac{y}{x} = \lim_{x \rightarrow \infty} \frac{f(x)}{x}$$





$$b = \underline{y} - ax = \lim_{x \rightarrow \infty} (f(x) - ax)$$

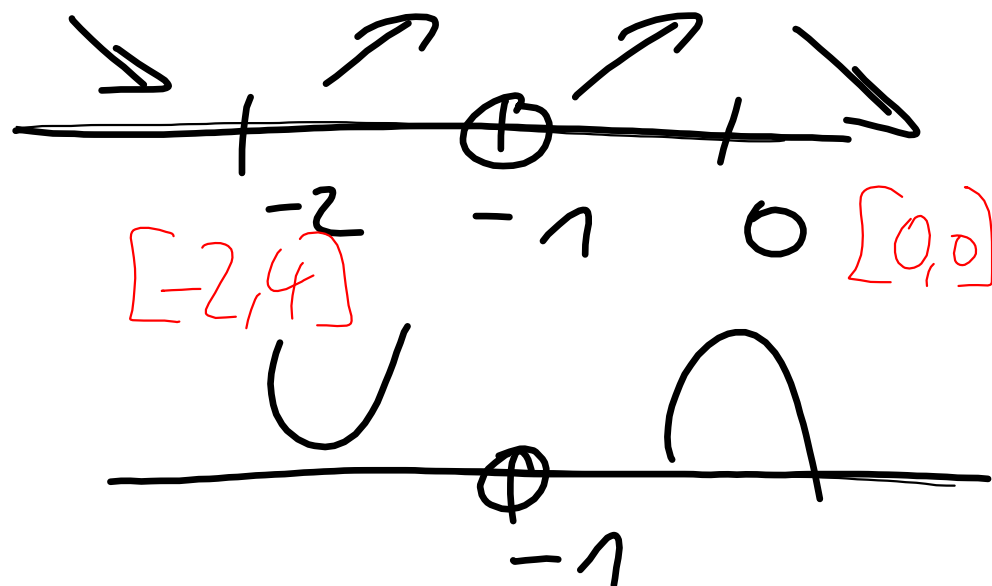


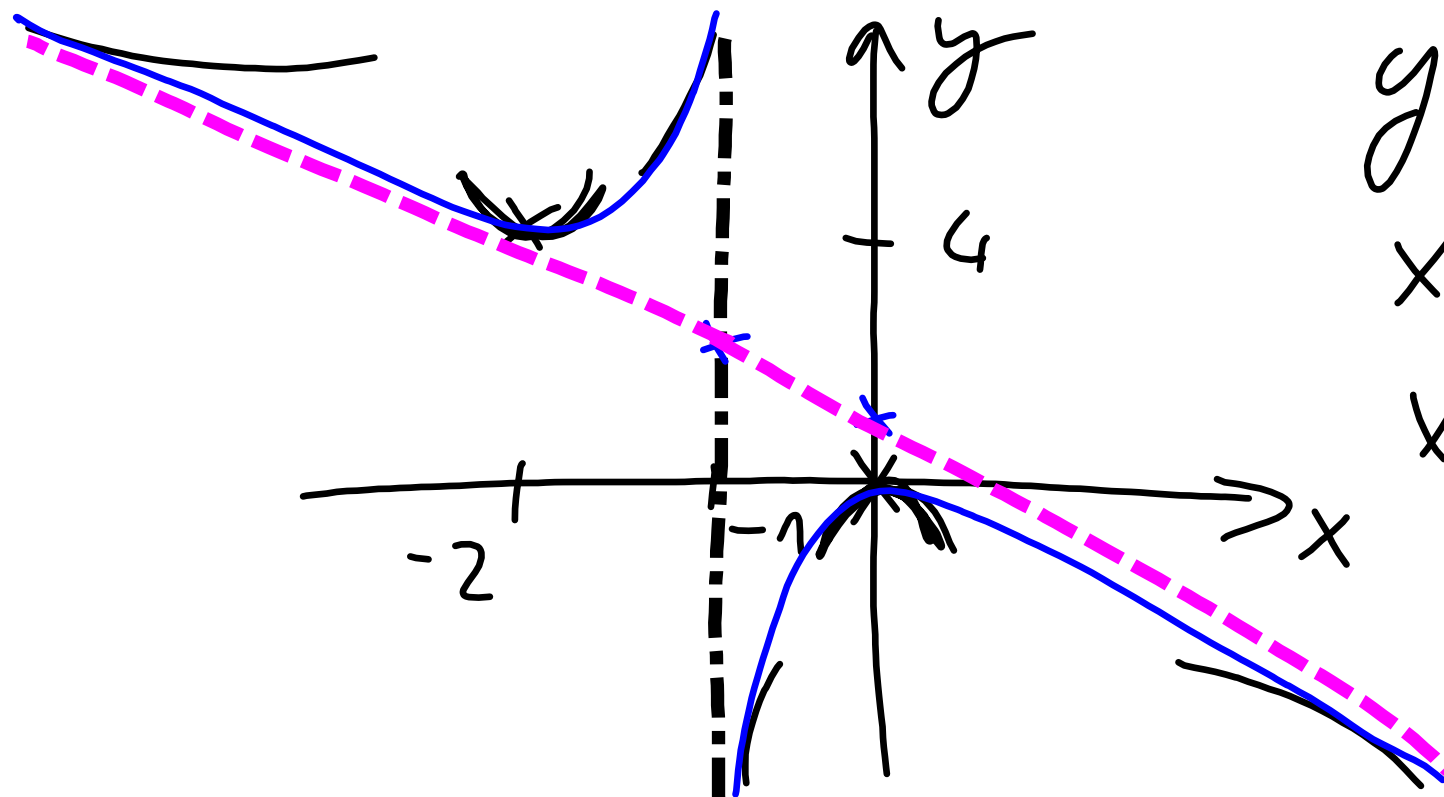


$$X = -1^+ \quad | \quad -$$

$$r \pm \infty: y = -x + 1$$

$$P = [0, 0]$$





$$y = 1 - x$$

$$x = 0 \Rightarrow y = 1$$

$$x = -1 \Rightarrow y = 2$$