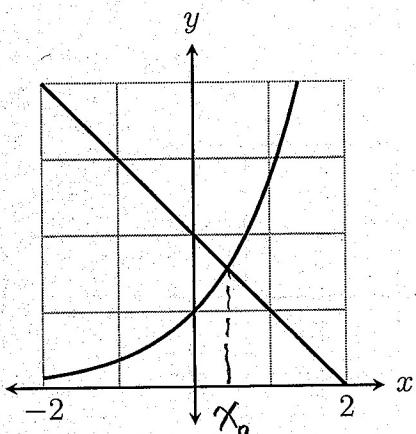


1. Show that the graphs of $f(x) = e^x$ and $f(x) = 2 - x$ intersect somewhere in the interval $[-2, 2]$.

+8



$$h(x) = e^x - (2 - x)$$

$$= e^x - 2 + x$$

$$h(-2) \approx -3.86$$

$$h(2) \approx 7.39$$

Since $-3.86 < 0 < 7.39$, there is x_0 in $(-2, 2)$ with $h(x_0) = 0$.

This is where the curves intersect.

2. Find $\lim_{x \rightarrow -\infty} \frac{e^x}{1-x}$. = 0

+4 Of the form $\frac{0}{\infty}$, so limit is 0.

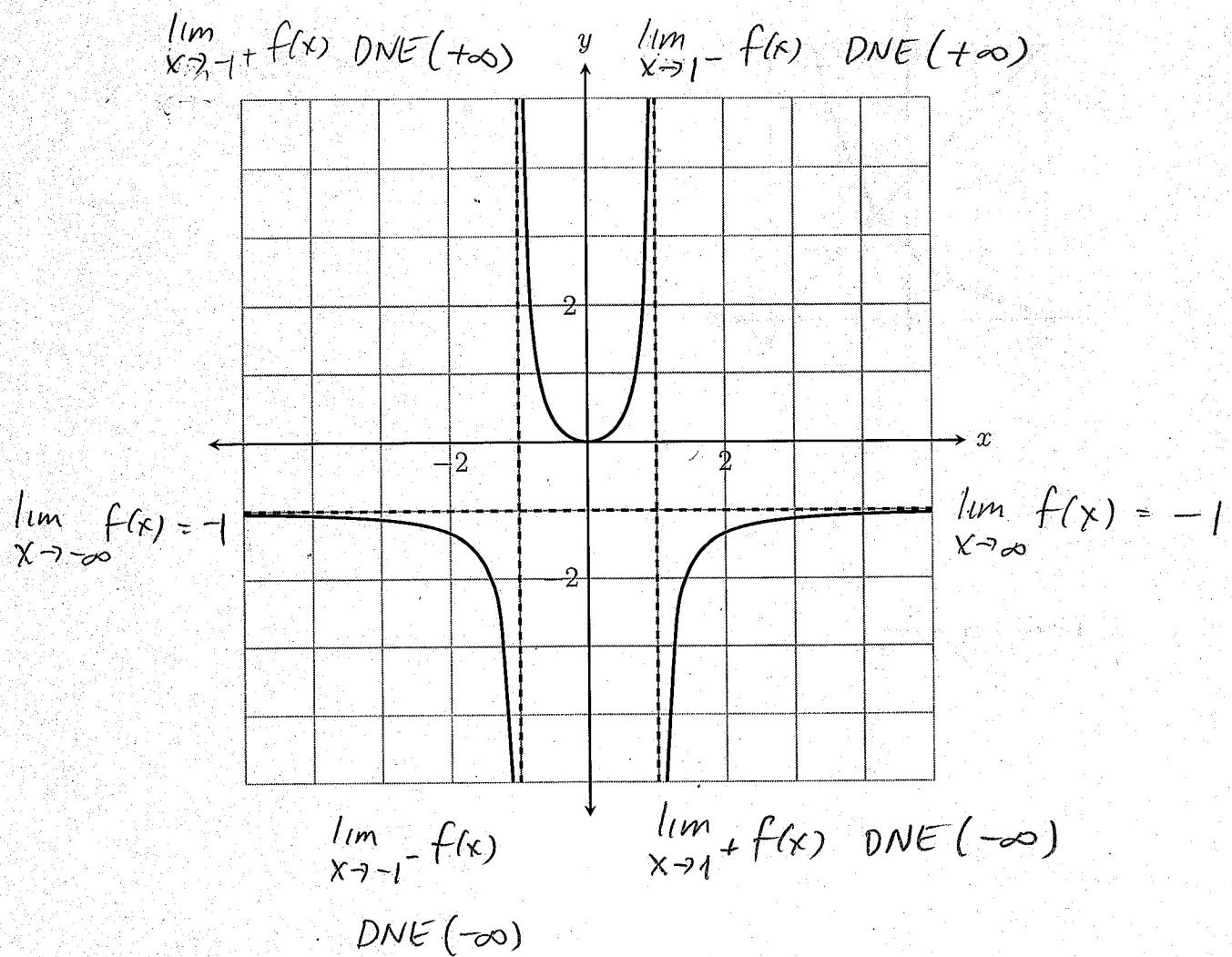
3. Find $\lim_{x \rightarrow \infty} \frac{e^x}{1-x}$.

+8 Of the form $\frac{+\infty}{-\infty}$, use LR

$$\lim_{x \rightarrow \infty} \frac{e^x}{1-x} \stackrel{\text{LR}}{=} \lim_{x \rightarrow \infty} \frac{e^x}{-1} \text{ DNE}(-\infty)$$

4. Consider $f(x) = \frac{x^2}{1-x^2}$. Find all horizontal and vertical asymptotes, and label them on the graph using appropriate limit notation.

+16



$$N=2, D=2, \text{ so HA at } \frac{1}{-1} = -1.$$

$$x^2 - 1 = 0 \Rightarrow x = \pm 1 \quad \text{VA.}$$