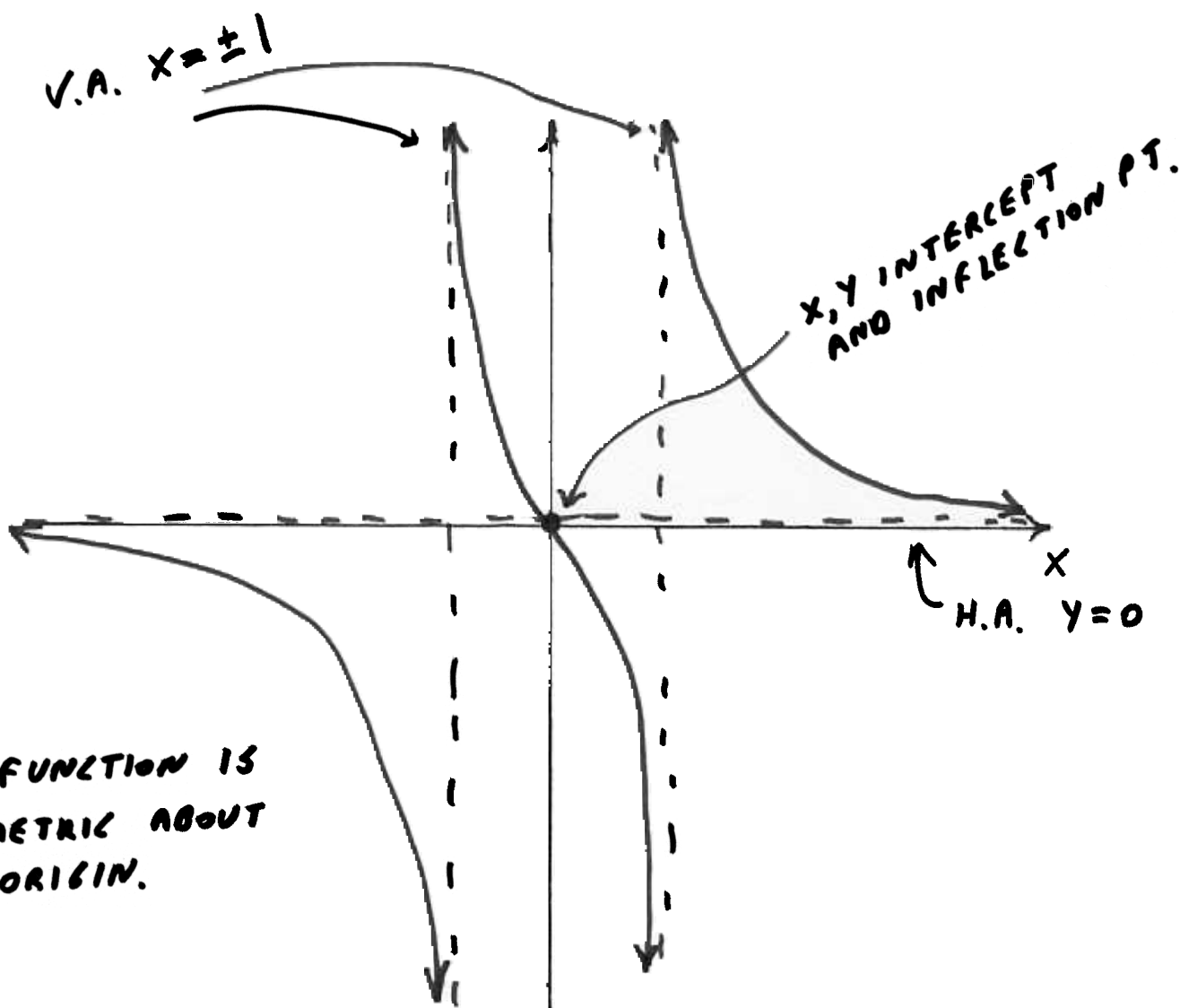


8. (12 points) Sketch the graph of $f(x) = \frac{x}{x^2-1}$. Be sure to find and label all asymptotes and intercepts, maximums and minimums and inflection points. Determine any symmetry and indicate intervals where $f(x)$ is increasing, decreasing and concave up or concave down.

$$f'(x) = \frac{x^2-1-2x^2}{(x^2-1)^2} = -\frac{x^2+1}{(x^2-1)^2} \Rightarrow \begin{matrix} f \text{ DEC. ON} \\ (-\infty, -1) \\ (-1, 1) \\ (1, \infty) \end{matrix}$$

$$f''(x) = \frac{2x(x^2+3)}{(x^2-1)^3} \Rightarrow \begin{matrix} f \text{ CONC. DOWN ON} \\ (-\infty, -1), (0, 1) \text{ AND} \\ \text{CONC. UP ON} \\ (-1, 0), (1, \infty) \end{matrix}$$



THE FUNCTION IS SYMMETRIC ABOUT THE ORIGIN.