8. [7 points] The function $f(x)$ is defined as follows:

$$f(x) = \begin{cases} \dfrac{x}{x^2+1} & x \le 0 \\ ? & x > 0. \end{cases}$$

Note that the formula for $f(x)$ for $x > 0$ is unknown. However, it is known that $f(x)$ is differentiable at each point in its domain $(-\infty, \infty)$, and that $f'(x) > 0$ for all $x \ge 0$.

a. [4 points] Find the x-coordinates of all global minimum(s) and global maximum(s) of $f(x)$ **on the interval** $(-\infty, 0]$. If there are none of a particular type, write NONE. Use calculus to find your answers, and make sure that you show enough evidence to justify your conclusions.

Answer: Global min(s) at $x =$ _____

Answer: Global max(es) at $x =$ _____

b. [3 points] For each question below, circle all correct answers. No justification is needed.

At which of the following value(s) of x does $f(x)$ attain a global minimum **on the interval** $[-2, 2]$?

$x = -2$ $x = -1$ $x = 0$ $x = 1$ $x = 2$ NONE OF THESE

At which of the following value(s) of x does $f(x)$ attain a global maximum **on the interval** $[-2, 2]$?

$x = -2$ $x = -1$ $x = 0$ $x = 1$ $x = 2$ NONE OF THESE