For this problem you may use your grapher but you may not graph the function

Sketch a graph of the function \( f(x) = \frac{x}{(x+1)^2} \) where \( f'(x) = \frac{1-x}{(x+1)^3} \) and \( f''(x) = \frac{2(x-2)}{(x+1)^4} \).

Answer the questions below

a. What is the domain?

b. Vertical asymptotes (if any)?
   Horizontal asymptotes (if any)?

c. What are the critical numbers (if any)?
   Sketch a sign line diagram (arrow diagram) showing **intervals of increase/decrease**

\[ \frac{\text{---}}{0} \frac{\text{---}}{0} \]

\[ \frac{\text{---}}{0} \frac{\text{---}}{0} \]

d. Give the coordinates \((x \text{ and } y)\) of all **relative extrema** (if any) and indicate whether it’s a relative maximum or relative minimum.

e. Sketch a sign line diagram indicating **intervals of concave up & concave down**

\[ \frac{\text{---}}{0} \frac{\text{---}}{0} \]

Give the coordinates \((x \text{ and } y)\) of all **inflection points** (if any)

Using the above make a sketch of the graph – accuracy counts