9. Vertical Asymptotes? \( \frac{x}{(1+x)^2} \) 

VA's for rational functions occur where the denominator \( = 0 \)

\( \Rightarrow \) VA when \( (1+x)^2 = 0 \) \( \Rightarrow \) VA at \( x = -1 \)

Now must determine which way \( f(x) \) is going to \( \infty \) \( (+ \text{ or } -) \) on each side of the VA at \( x = -1 \)

\( \Rightarrow \) So for

\[ f(-1.1) \]

\[ \frac{-1.1}{(1+(-1.1))^2} \]

\[ (-) \cap (+) \Rightarrow \text{must be going down} \]

Look little to left of \( x = -1 \)

\[ f(-0.9) \]

\[ \frac{-0.9}{(1+(-0.9))^2} \]

\[ (-) \cap (+) \Rightarrow \text{must be going down to } -\infty \text{ on right} \]

Summary for \( VA \)

\[ x = -1 \]

\[ \infty \]

\[ -\infty \]