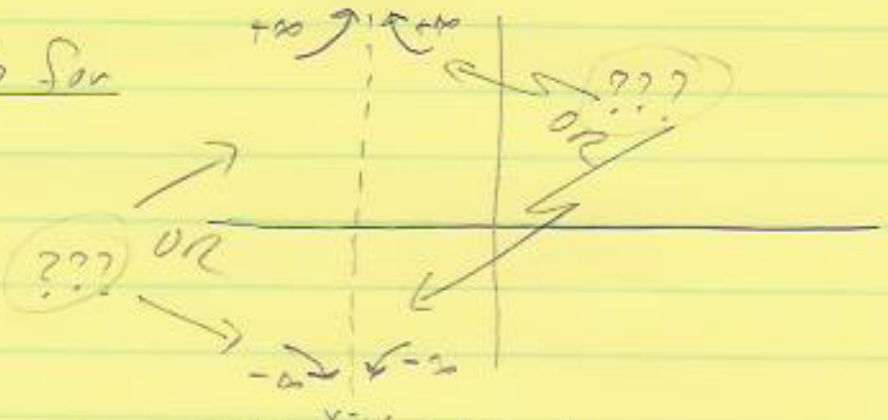
9. Vertical Asymptotes? $f(x) = \frac{x}{(1+x)^2}$

VAs 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 ∞ (+ or −) on each side of the VA at $x = -1$

$\Rightarrow$ So for



look at $f(x)$ a little to left of $x = -1$

$f(-1.1) = \frac{-1.1}{(1+(-1.1))^2} = \frac{(-)}{(+)} = (-) \Rightarrow$ must be going down to $-\infty$ on left.

look little to right of $x = -1$

$f(-0.9) = \frac{(-0.9)}{(1+(-0.9))^2} = \frac{(-)}{(+)} = (-) \Rightarrow$ must be going down to $-\infty$ on right

Summary for VA at $x = -1$