8 End Behavior of $f(x) = \frac{x}{(1+x)^2}$

Left End: as $x \to -\infty$, $f(x) \to ?$

If $\lim_{x \to -\infty} f(x) =$ constant then there is a horizontal Asymptote at left end given by equation $y =$ constant.

If there is a HA at Left End then you must determine if the graph is approaching the Horizontal line of the HA from above or below.

Using properties of polynomials for large x.

$$\lim_{x \to -\infty} \frac{x}{(1+x)^2} \Rightarrow \lim_{x \to -\infty} \frac{x}{(x)^2} \to \lim_{x \to -\infty} \frac{1}{x}$$

$$\to \frac{1}{-\infty} \Rightarrow -\left(\frac{1}{\infty}\right) \to -0 \to 0$$

approaches HA

given by line $y = 0$ from below.

$\Rightarrow$ Left End: