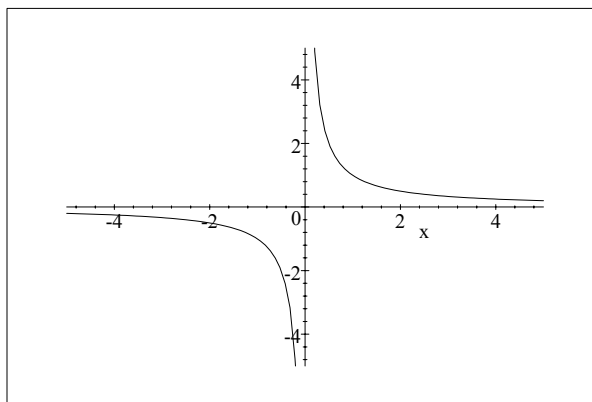


An Important Function (The Reciprocal Function)

Consider the "reciprocal function" $f(x) = \frac{1}{x}$. It is a pretty simple function. We can let x be any number except 0 of course. Here is a brief "table" showing some ordered pairs of the function.

x	$f(x)$
3	$\frac{1}{3}$
2	$\frac{1}{2}$
1	1
$\frac{1}{2}$	2
$\frac{1}{3}$	3
1	1
2	$\frac{1}{2}$
3	$\frac{1}{3}$
4	$\frac{1}{4}$



And...here is a graph of the function.

Using some important "vocabulary", we say that the **Domain** is all reals except 0. And, we notice that the graph never touches the x axis so the **Range** is all Reals except 0 also. Notice that the y axis is an **Asymptote** as is the x axis.

$f(x) = \frac{1}{x}$ is definitely a function since for each x there is only one answer. If we draw vertical lines through the graph, each vertical line hits the graph just once. This is another indicator that we have a function. Now, if we draw horizontal lines on the graph, we will notice that they hit just once also. This implies that $f(x) = \frac{1}{x}$ is a **one-to-one function**.

In calculus we will be using the "right hand branch" of this function quite a bit. As a matter of fact, it will be the building block for logarithmic functions believe it or not. So, try to become "friends" with the reciprocal function!