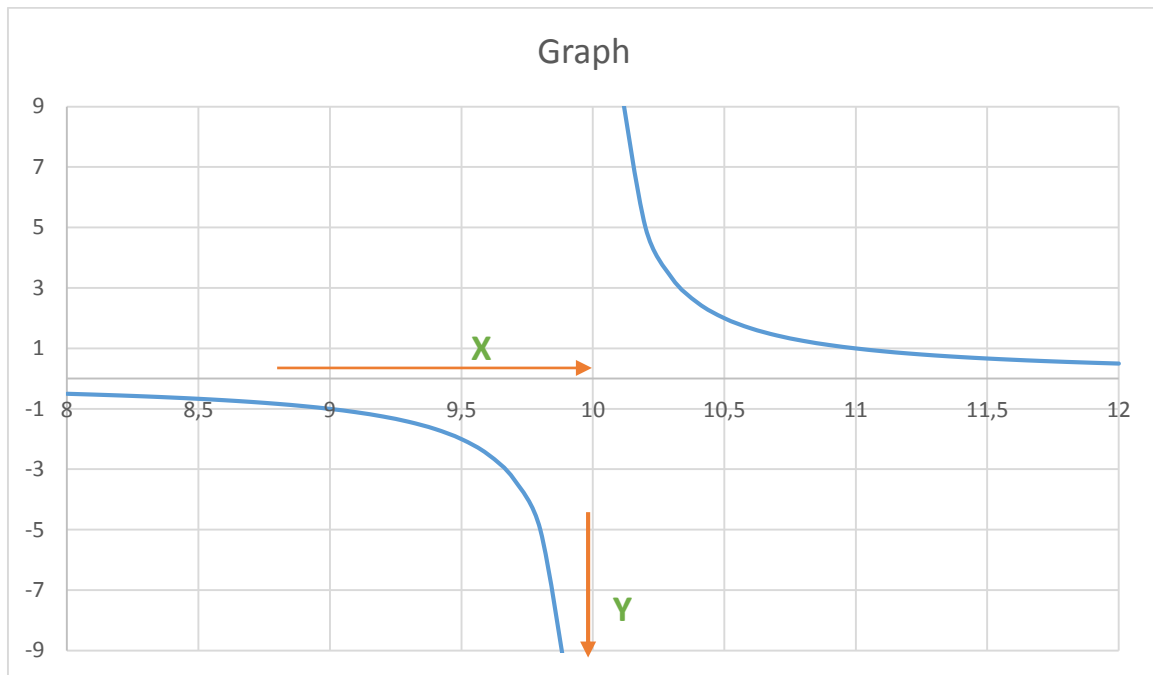# Answer on Question #53943 – Math – Calculus

Use graphs and tables to find the limit and identify any vertical asymptotes of the function.

Limit of 1 divided by the quantity x minus 10 as x approaches 10 from the left.

## Solution

$$\lim_{x \to 10-0} \frac{1}{x-10}$$



Graph

As you can see, $x = 10$ is the only vertical asymptote.

Using graph, you can see, that when x approaches 10 from the left, values of quantity $\frac{1}{x-10}$ are very small, and going down by Y-axes.

So,

$$\lim_{x \to 10-0} \frac{1}{x-10} = -\infty$$

Let find limit using tables.

| x | | 9,90 | 9,91 | 9,92 | 9,93 | 9,94 | 9,95 | 9,96 | 9,97 | 9,98 | 9,99 | 10,00 | 10,01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $\frac{1}{x-10}$ | | -10,00 | -11,11 | -12,50 | -14,29 | -16,67 | -20,00 | -25,00 | -33,33 | -50,00 | -100 | #DIV/0! | 100,00 |

Looking at the values in this table, the limit is going smaller and smaller. When X is going from 9,9 to 10, the quantity $\frac{1}{x-10}$ is going smaller and smaller. So, the limit is $-\infty$ (-infinity).

**Answer:** $-\infty$.