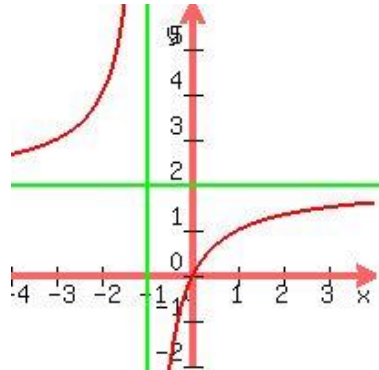


Find the no. of integral solutions of: $xy=2x-y$.

$$xy = 2x - y \rightarrow xy + y = 2x \rightarrow y(1 + x) = 2x \rightarrow y = \frac{2x}{1 + x}$$

The graph of that has vertical asymptote $x=-1$ and horizontal asymptote $y=2$.

We plot that graph:



The only possibility of y having an integral value when x has an integral value, is for integral values of x when y is at least 1 unit away from its horizontal asymptote $y=2$, and that is when

$$\left| \frac{2x}{1+x} - 2 \right| \geq 1$$

By ordinary methods of college algebra, that has solution $[-3,-1) \cup (-1,1]$. So we only need to try x -values in that region which are $-3, -2, 0$, and 1 . Substituting those in

$$y = \frac{2x}{1+x}$$

we find the only four integral solutions: $(-3,3), (-2,4), (0,0), (1,1)$. So the number of integral solutions is 4.