

Chapter 4 / **Example 7****Finding horizontal asymptotes**

Find the horizontal asymptote of $f(x) = \frac{x+1}{2x+3}$.

Open a new document and add a Graphs page.

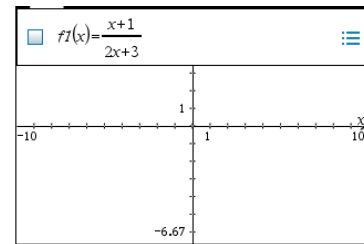
The entry line is displayed at the top of the work area.

The default graph type is function, so 'f1(x)= ' is displayed.

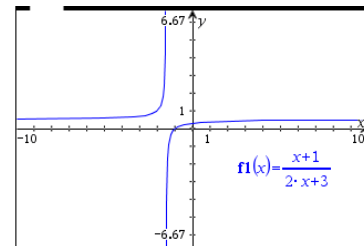
The default axes are $-10 \leq x \leq 10$ and $-6.67 \leq y \leq 6.67$.

Press **ctrl** **[$\frac{\Box}{\Box}$]** open the fraction template.

Type $\frac{x+1}{2x+3}$ and press **enter**.

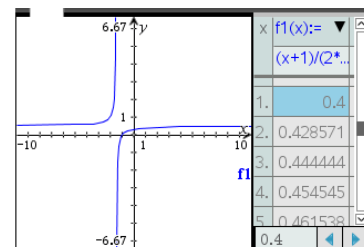


The GDC displays the graph $f1(x) = \frac{x+1}{2x+3}$ with the default axes.



To view asymptotic behavior, it is helpful to use a table of values. Press **ctrl** **[T]**.

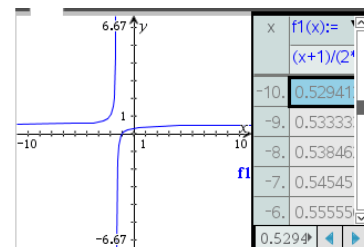
A table of values is displayed alongside the graph.



Scroll up the table using **▲** on the touchpad.

The values of $f1(x)$ are approaching -0.677 .

As x decreases to -10 the value of $f1(x)$ is also decreasing and is approaching 0.5 .



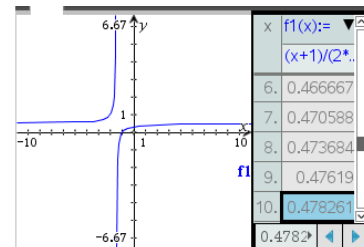
Chapter 4 / **Example 7**

Finding horizontal asymptotes

Scroll down the table using ▼ on the touchpad.

The values of $f1(x)$ are positive and approaching 0.5.

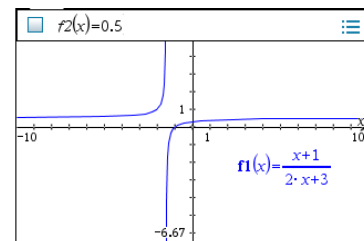
You can conclude that $x = 0.5$ is a horizontal asymptote.



Press **ctrl** **T** again to remove the table.

Press **tab** to display the entry line again. This time ' $f2(x)=$ ' is displayed.

Type 0.5 and press **enter**.



The GDC now displays the function $f1(x) = \frac{x+1}{2x+3}$ and the asymptote $f2(x) = 0.5$.

