Chapter 4 / **Example 9**

Finding the limit of a sequence

The GDC will graph sequences as well as functions.

Find $\lim_{n\to\infty} \frac{n^3+4n}{2n^3-1}$. Confirm your answer graphically.

Open a new document and add a Graphs page.

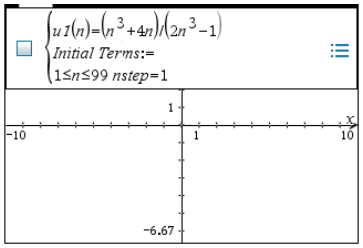
The entry line is displayed at the top of the work area.

Press menu 3:Graph Entry/Edit | 7:Sequence | 1:Sequence

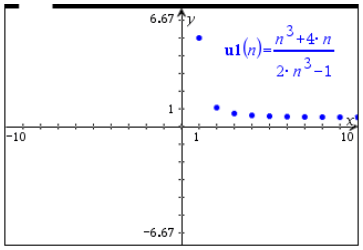
The default graph type is function, so '*f1*(*x*)=' is displayed.

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

Type $(n^3+4n) \div (2n^3-1)$ and press enter to enter the sequence as u1(*n*).



The GDC displays the graph $f1(x) = x^3 + 4x^2 + x - 6$ with the default axes.

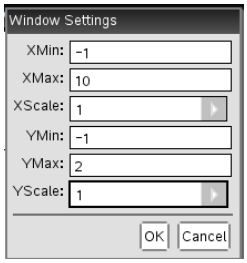


Change the window settings.

Press menu 4:Window/Zoom | 1:Window Settings…

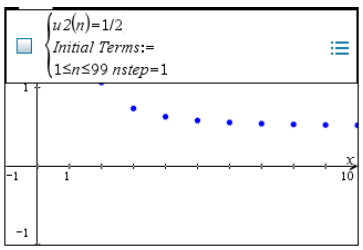
Set the axes to show $-1 \le x \le 10$ and $-1 \le y \le 2$ with scales of 1.

Press enter when you have finished.



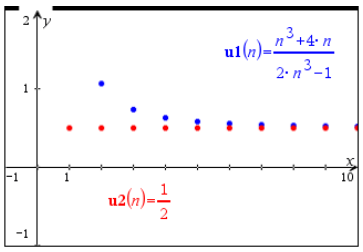
Press tab to display the entry line again. This time '*u2*(*n*)=' is displayed.

Type $1 \div 2$ and press enter.



Chapter 4 / **Example 9**

Finding the limit of a sequence

The GDC displays the graphs in a suitable window. The sequence converges to $\frac{1}{2}$.	
Press menu 4:Window/Zoom | 1:Window Settings… Change XMax to 30. Press enter when you have finished. The graph shows the convergence even more clearly.