

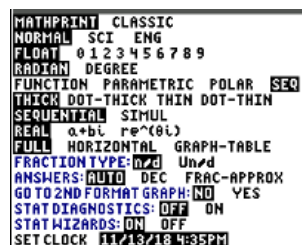
Chapter 4 / **Example 9**

## Finding the limit of a sequence

The GDC will graph sequences as well as functions.

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

To enter sequence mode press **[mode]**. Use the **[◀]** **[▶]** **[▲]** **[▼]** keys to place the cursor on SEQ in the Mode menu, and then press **[enter]** to highlight it.



```

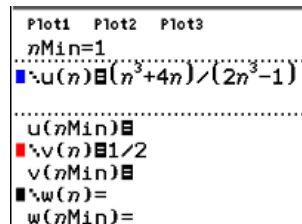
MATHPRINT CLASSIC
NORMAL SCI ENG
FLOAT 0 1 2 3 4 5 6 7 8 9
RADIAN DEGREE
FUNCTION PARAMETRIC POLAR SEQ
THICK DOT-THICK THIN DOT-THIN
SEQUENTIAL SIMUL
REAL a+bi re^(θi)
FULL HORIZONTAL GRAPH-TABLE
FRACTION TYPE: n/d Unrd
ANSWERS: AUTO DEC FRAC-APPROX
GOTO2ND FORMAT GRAPH: NO YES
STAT DIAGNOSTICS: OFF ON
STAT WIZARDS: ON OFF
SET CLOCK 11/13/18 4:35PM
  
```

Press **[f1]** **[y=]** to display the equation entry screen.

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

Type  $1 \div 2$  and press **[enter]** to enter the second sequence as  $v(n)$ .

Press **[X,T,θ,n]** to enter  $n$ . Leave other items blank.



```

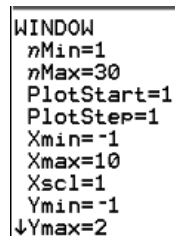
Plot1 Plot2 Plot3
nMin=1
u(n)=(n^3+4n)/(2n^3-1)
v(n)=1/2
w(n)=
w(nMin)=
  
```

Press **[f2]** **[window]** **[format]**

Change  $n_{\text{Max}}$  to 30 and set the axes to show  $-1 \leq x \leq 10$  and  $-1 \leq y \leq 2$  with scales of 1.

You can leave the other items as they are.

Press **[f5]** **[graph]** when you have finished.

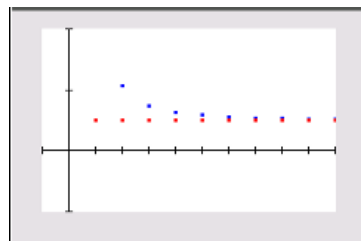


```

WINDOW
nMin=1
nMax=30
PlotStart=1
PlotStep=1
Xmin=-1
Xmax=10
Xscl=1
Ymin=-1
Ymax=2
  
```

Press **[f5]** **[graph]** to display the graph screen.

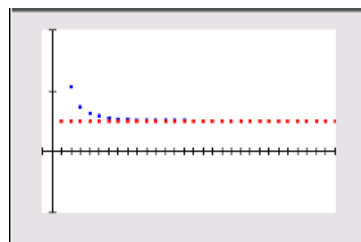
The GDC now displays the sequences.



Press **[f2]** **[window]** and change the maximum value of  $x$  to 30.

Press **[f5]** **[graph]**.

The graph shows the convergence even more clearly.



Chapter 4 / **Example 9**

# Finding the limit of a sequence