

Chapter 3 / **Example 34**

Solving polynomial inequalities

Use an algebraic method to solve the following inequality $x^3 + 4x^2 + x - 6 > 0$ and check your answer using a calculator.

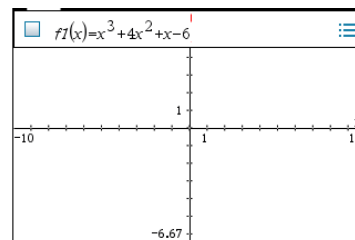
Open a new document and add a Graphs page.

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

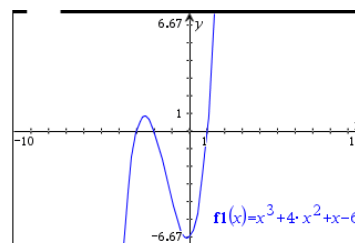
The default graph type is function, so ' $f1(x)=$ ' is displayed.

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

Type $x^3 + 4x^2 + x - 6$ and press **enter**.



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

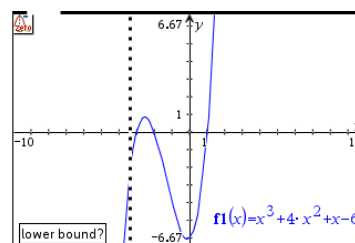


To find the zeros press **menu** 6:Analyse Graph | 1:Zero

You will need to give the lower and upper bounds of the region that includes the zero.

The GDC shows a line and asks you to set the lower bound. Move the line using the touchpad and choose a position to the left of the zero.

Click the touchpad.

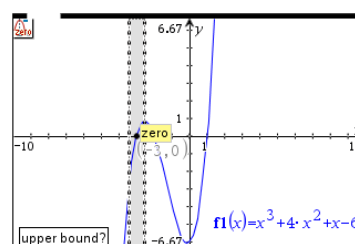


The GDC shows another line and asks you to set the upper bound.

Use the touchpad to move the line so that the region between the lower and upper bounds contains the zero.

When the region contains the zero, the calculator will display the word 'zero' in a box.

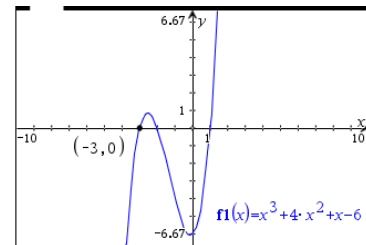
Click the touchpad.



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The GDC displays a zero at $(-3, 0)$.



Repeat for the second and third zeros.

The GDC displays zeros at $(-3, 0)$, $(-2, 0)$ and $(1, 0)$.

$$x \in]-3, -2[\cup]1, \infty[$$

