

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.

Press **MENU** 5 **GRAPH** to display the equation entry screen.

Type $x^3 + 4x^2 + x - 6$ and press **EXE** to enter the equation as Y1.

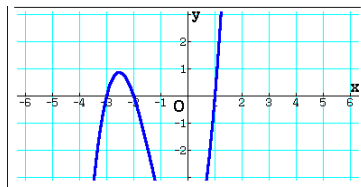
Graph Func :Y=
Y1= x^3+4x^2+x-6 [—]
Y2: [—]
Y3: [—]
Y4: [—]
Y5: [—]
Y6: [—]
[SELECT] [DELETE] [TYPE] [TOOL] [MODIFY] [DRAW]

Press **F6** DRAW to display the graph screen.

The GDC now displays the quadratic function:

$$Y1 = x^3 + 4x^2 + x - 6$$

The default axes are $-6.3 \leq x \leq 6.3$ and $-3.1 \leq y \leq 3.1$.



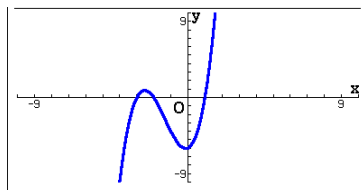
Press **F3** V-Window and then **F3** STANDARD to select the standard window. The standard axes are $-10 \leq x \leq 10$ and $-10 \leq y \leq 10$.

Press **EXIT** when you have finished.

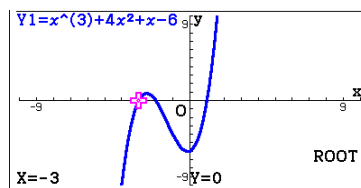
View Window
Xmin : -10
max : 10
scale: 1
dot : 0.05291005
Ymin : -10
max : 10
[INITIAL] [TRIG] [STAND] [V-WIN] [SQUARE]

Press **F6** DRAW to display the graph screen.

The GDC now displays the curve with standard axes.

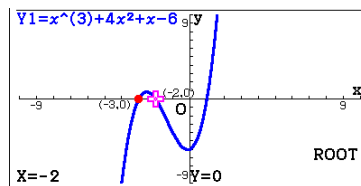


To find the zeros press **F5** G-SOLVE and then press **F1** ROOT.
The GDC shows the first zero.



Press **EXE** to display the coordinates.

Press **▶** to move to the next zero and press **EXE** to display its coordinates.



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Press **▶** to move to the next zero and press **EXE** to display its coordinates.

Press **EXIT** to leave G-Solv mode and **F6** DRAW to display the graph screen again.

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

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

