How would you find the zeros of a polynomial if it isn't factorable?

Finding zeros of a function:

Zeros of a function are x-intercepts of the graph!

Graph the function and find the the x-intercepts.

But this only gives you the REAL ZEROS!

There are two methods you can use to find zeros using the Ti-84 graphing calculator.

These two methods are briefly described in the following screens.

Finding zeros of a function with the graphing calculator:

Method 1: Finding ZEROS

$$y = x^4 + 2x^3 - 3x^2 - x + 3$$

Use the option on the graphing calculator to find zeros:
2ND TRACE
2: ZEROS

zeros are: -2.81 , -1

Zeros of a function are the values of x when y = 0.

Method 2: Finding Intersections

$$0 = x^4 + 2x^3 - 3x^2 - x + 3$$

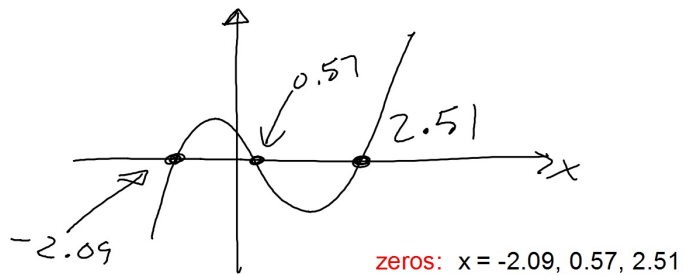Graph $Y_1 = x^4 + 2x^3 - 3x^2 - x + 3$
and $Y_2 = 0$

use the option on the graphing calculator to find points of intersection.
2ND TRACE
5: intersect

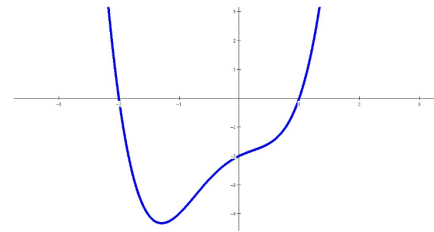zeros are: -2.81 , -1

Find the zeros of this function: $y = x^3 - x^2 - 5x + 3$

0.57

2.51

−2.09

zeros: x = -2.09, 0.57, 2.51

Find the zeros of this function:

$$y = x^4 + x^3 - x^2 + x - 2$$

There are only two real zeros that can by found by graphing.

Zeros: x = -2, 1

The remaining zeros are imaginary. Students will learn in a later section how to find these imaginary zeros.