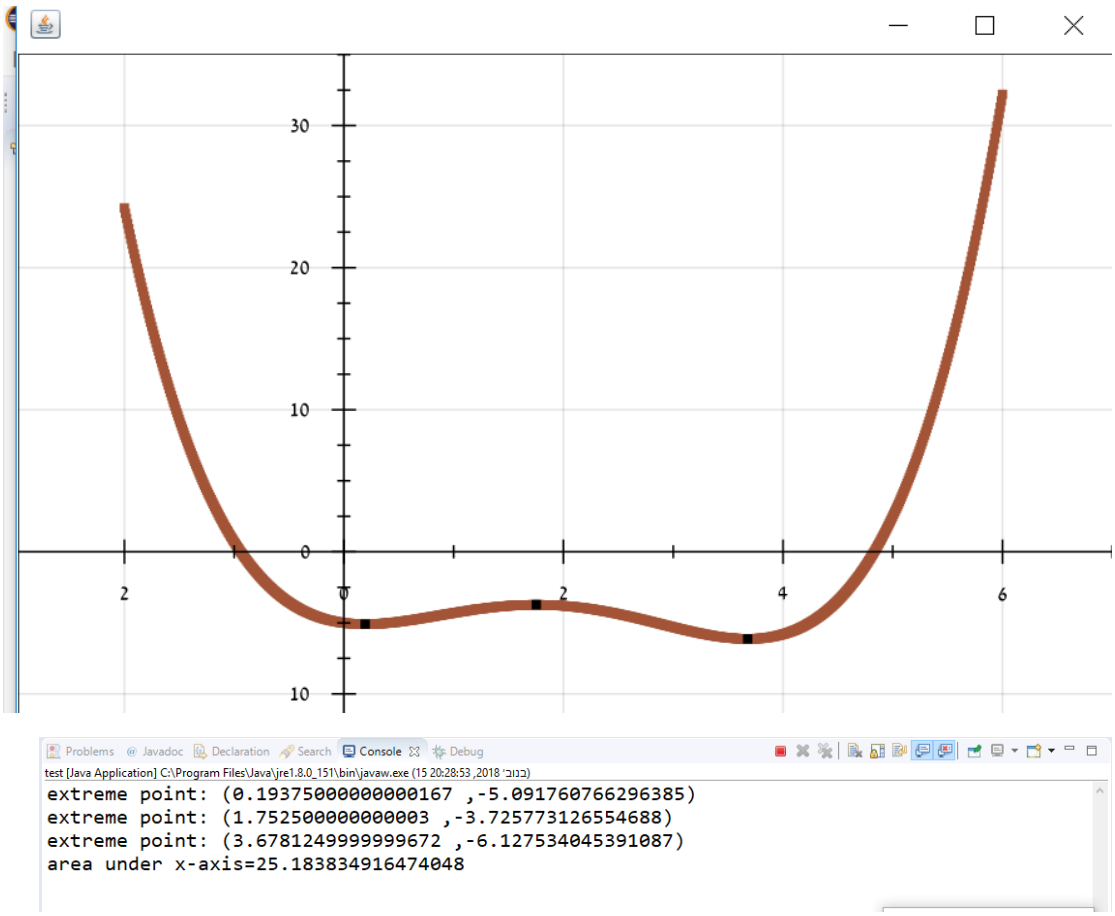
Netanel Davidov- 208252684, Carmel Ron-315858340

This file is intended to show and explain the purpose of the project, what it does, and what capabilities it gives to those who use it.

In this project the user inserts a particular polynomial and gets the option to perform the following operations on this polynomial like : initialization, add polynom with polynom, subtract between 2 polynom, multiply, derivative, equal between to polynoms, copy polynom, the value of f(x)(of interface function), root approximate value (by numerical method), area by compute Rimman's integral by calculate sum of rectangle in eps size step.

There is also a possibility draw a polynomial and marks the extreme points like this :



To draw the graph we used the Gral Library : http://trac.erichseifert.de/gral

This project is based on three interfaces:

Function- this interface represents a simple function of type y=f(x), where both y and x are real numbers.

cont_function -is an interface for continuous functions and extends function

Polynom_able -interface which contains statements on many functions which require implementation in the classes that will be implement the interface. This interface represents a general polynomial of the form :
f(x) = a_1X^b_1 + a_2X^b_2 ... a_nXb_n, where: a_1, a_2 ... a_n are real numbers and b_1=0…b_n are none negative integers (naturals)

And this classes:

Monom-

This class represents a simple "Monom" of shape a*x^b, where a is a real number and a is an integer (summed a none negative), class implements function and support simple operations as: addition, subtraction, multiplication, derivative and comparison between monom.
These actions are performed on a single monom, so the Polynom class that performs these operations on its polynom, consisting of a collection of monoms, will often use this class because it acts directly and briefly on the polynomial monoms.

Polynom-

The class that implements the Polynom_able interface is the Polynom class. The class definition is to define a collection of monoms that will be the polynomial.
The Polynom can be captured as the creation of a new Polynom object that contains a collection of monom objects, or in the form of a string that the constructor receives, converts it to the expected polynomial (pay attention to input correctly).

Monom_Comperator -

This class implements Comparator. it sorting the monomers in ascending order according to their power.

LinePlotTest –

This class uses a GRAL library to draw a polynomial in a particular field.
This class include LinePlotTest function that draw a polynomial and marks the extreme points of the polynomial in the given field and also prints the values of the points.
In addion the function print the area of the polynomial under the X axis.