README:

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The project in a nutshell

This project contains three main classes : Monom ,Polynom and Monom Comparator. Three Interfaces Polynom_able ,function and cont_function.

JUNIT is included.

The Polynom is an Object composed of Monoms in a shape a*x^b (while b must be a Natural number).

The Polynom's class Support several function such as:

Polynom's methods:

Fields:

ArrayList<Monom> arrayListPolynom – an arraylist of Monoms to represent the polynom.

Constructors:

Polynom() – Creates default Polynom with no Monoms in it.

Polynom(String s) – Creates a Polynom according to a given String .

Polynom(Polynom_able p) - Creates a deep copy of the given Polynom_able (assuming Polynom able is from type Polynom).

Methods:

add(Monom m) – Adding a Monom to the Polynom.

add(Polynom_able p) – Adding a given Polynom to "our" Polynom.

subtract(Polynom_able p) – Subtracting a given Polynom to "our" Polynom.

multiply(Polynom_able p) – multiplying between the two polynoms.

Equals(Polynom p)- Checks if the two Polynoms are equals .

isZero()- checking if the polynom has no Monoms.

Area(double x0 ,double x1 ,eps)-calculating Riemann_integral .

Root()- assuming there is at least one solution to the Polynom f(x)=0 ,returning the one value of x answering this requirement.

derivative()- Returning Polynom_able/Polynom after derivative.

toString()- Printing the Polynom.

f(double x) – returning the value of the polynom for a given 'x'.

Iterator<Monom> iteretor() – return an Iterator of Monoms over this Polynom(has the method hasNext(), next() and remove()).

Monom's methods :

Fields:

double _coefficient – the coefficient of the Monom.
int _power – the power of the Monom.

Constructors:

Monom(double a, int b) – creates new Monom where a is the coefficient and b is the power.

Monom(Monom ot) – copy constructor creates new Monom with same coefficient and power as the Monom ot.

Methods:

Methods:

Void add(Monom m) – add the Monom m to current Monom.

Monom derivative() – derivative Monom and return new Monom.

double f(x) – return the result of f(x) in Monom.

double get_coefficient() – return the coefficient Monom.

int get_power() – return the power of Monom.

String toString() – return String a representation of this Monom in the shape ax^b.

Monom_Comparator:

This class compare the power of 2 Monoms.
This class has only 1 method.

Methods:

int Compare(Monom arg0, Monom arg1) – compare the power of 2 Monoms. If the power equal it returns 0, else if the power of Monom arg1 is higher it return positive else it returns negative power if Monom arg0 is higher.