Reference Documentation

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Abstract

Reference Documentation.
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bsp_20_fkt.hpp

Detailed Description

double `riemann` (double (* const func)(double), const double &a, const double &b, const int n) []

```
#include <bsp_20_fkt.hpp>
```

Calculates the integral value.of a 1D-function by the Riemann formula

Parameters:

func function func(x) to integrate

a	interval [a,b]
b	interval [a,b]
n	number of subintervals of [a,b]

Return:

integral f(x) from a to b

double `derivative` **(double (* const func)(double), const double &x, const double &h) []**

```
#include <bsp_20_fkt.hpp>
```

Calculates the first derivative f'(x) of a 1D-function by the finite difference.

Parameters:

func	function func(x) to differentiate
x	point for evaluation
h	distance from x in the finite difference formula

Return:

f'(x)

double `riemann` **(double (* const func)(double), const double &a, const double &b, const double eps=1e-4) []**

```
#include <bsp_20_fkt.hpp>
```

Calculates the integral value.of a 1D-function for a given accuracy by the Riemann formula

Parameters:

func	function func(x) to integrate
a	interval [a,b]
b	interval [a,b]
eps	absolute numerical accuracy

Return:

integral f(x) from a to b

double `derivative2` **(double (* const func)(double), const double &x, const double eps=1e-4) []**

```
#include <bsp_20_fkt.hpp>
```

Calculates the first derivative f'(x) of a 1D-function with a given accuracy by the finite difference.

Parameters:

func	function func(x) to differentiate
x	point for evaluation
eps	absolute numerical accuracy

Return:

f'(x)

double `newton_diff_approx` **(double (* const func)(double), const double &a, const double &b, const double eps=1e-4) []**

```
#include <bsp_20_fkt.hpp>
```

Solves the equation f(x)=0 in the interval [a,b] with the Newton iteration using the finite difference to approximate the needed first derivative. Calculates the first derivative f'(x) of a 1D-function with a given accuracy by the finite difference.

Parameters:

func	1D-function func(x)
a	interval [a,b]
b	interval [a,b]
eps	absolute numerical accuracy

Return:

one root of func(x) in the given interval