**Control work No. 1**

**Variant 1.**

What is called the differential of a function?

Calculate the differentials of the following functions:

*y = cos(3x)*

Find the integral:



Find a solution of the differential equation:



**Variant 2.**

Formulate the basic properties of the indefinite integral.

Calculate the differentials of the following functions:

1. *y = 2x3x2 + 1*

Find the integral:



Find a solution of the differential equation:



**Variant 3.**

Write down the basic integration formulas.

Find the derivative:

*y = 1/x*

Find the integrals:

*dx*

Find a solution of the differential equation:



**Variant 4.**

Algorithm for solving a differential equation with separable variables.

Calculate the differential of the function:

**

Find the integral:



Find a solution of the differential equation:



**Variant 5.**

What is the method of changing the variable?

Find the derivative:

**

Find the integrals:



Find a solution of the differential equation:



**Variant 6.**

What is called a differential equation?

Find the derivative:

*y = erx*

Find the integrals:



Find a solution of the differential equation:



**Variant 7.**

What is the solution of the differential equation?

Calculate the differential of the function:

**

Find the integral:



Find a solution of the differential equation:

y/sinx=y lny, y(/2)=e

**Variant 8.**

What is called a definite integral?

Calculate the differentials of the following functions:

**

Find the integrals:



Find a solution of the differential equation:

xy/+y=y2

**Variant 9.**

Write down the Newton-Leibniz formula.

Find the derivative:

**

Calculate the differential of the following functions:

Calculate the area bounded by lines:



Find a solution of the differential equation:



**Variant 10.**

How is the average value of a function calculated on a segment?

Calculate the differential of the following functions:

*y = tg(ax + b)*

Calculate the definite integral:



Find a solution of the differential equation:



**Variant 11.**

How are the areas of curved shapes calculated?

Find the derivative:



Calculate the definite integral:



Find a solution of the differential equation:



**Variant 12.**

Derivative of basic elementary functions.

Find the derivative:

*y = sinxx cosx*

Calculate the area bounded by lines:

*f(x) = 2x25x3, a* = 0,5, *b =* 4,5

Find a solution of the differential equation:



**Variant 13.**

2. List the rules for finding the derived function.

Find the derivative:



Calculate the area bounded by lines:

*f(x) = 2x2x6, a =* 1,5, *b =* 3,5

Find a solution of the differential equation:



**Variant 14.**

List the rules for finding the derived function.

Find the derivative:



Find the integral:



Find a solution of the differential equation:









