Individual task on the topic "Differential"

VARIANT 1

1. Find the derivative of a complex function:

$y = \arccos \frac{1}{\sqrt{x}}$

2. Find the differential of a function:

$y = \frac{x^2 + 16}{4x}$

3. Calculate the approximate value of the function at a point

$y = x^5 + x^4 + 3x^3 + 2x + 3, \quad x = 1{,}05$

VARIANT 2

1. Find the derivative of a complex function:

$y = \sqrt{x^2 - 3}$

2. Find the differential of a function:

$y = 3\left(\frac{x^4}{2} - x^2\right)$

3. Calculate the approximate value of the function at a point

$y = \sqrt[5]{x}$, $x = 0{,}9$

VARIANT 3

1. Find the derivative of a complex function:

$y = \arcsin \frac{5x}{2}$

2. Find the differential of a function:

$y = x^5 - \frac{5}{3}x^3$

3. Calculate the approximate value of the function at a point

$y = \frac{1}{\sqrt[3]{x}}$, $x = 8{,}03$

VARIANT 4

1. Find the derivative of a complex function:

$y = \ln(x^2 - 1)$

2. Find the differential of a function:

$y = \frac{5x^2}{x^2 - 25}$

3. Calculate the approximate value of the function at a point

$y = x^4 + x^3 + 2x$, $x = 0{,}99$

VARIANT 5

1. Find the derivative of a function:

$$y = \frac{2}{(1-x^2)(1+x^4)}$$

2. Find the differential of a function:

$$y = 1 + \frac{4x+1}{x^2}$$

3. Calculate the approximate value of the function at a point

$y = \frac{x-1}{x^2+1}$, x= 2,05

VARIANT6

1. Find the derivative of a complex function:

$y = \sin x \cos 3x$

2. Find the differential of a function:

$$y = \frac{3x}{1+x^2}$$

3. Calculate the approximate value of the function at a point

$y = \sqrt[5]{x}$, x= 0,9

VARIANT 7

1. Find the derivative of a function:

$$y = \frac{8 - 3\sqrt{x^3} + 2x}{1 + 6x\sqrt{x} - 3x^2}$$

2. Find the differential of a function:

$$y = 1 - x^2 + \frac{x^4}{8}$$

3. Calculate the approximate value of the function at a point

$y = x^5 + x^4 + 3x^3 + 2x^2 + 3x$, x= 2,03

VARIANT 8

1. Find the derivative of a complex function:

$y = \ln(3x)$

2. Find the differential of a function:

$$y = (x+1)e^{-2x}$$

3. Calculate the approximate value of the function at a point

$y = \sqrt[4]{x} - 3x$, x= 0,9

VARIANT 9

1. Find the derivative of a function:

$y=x^2 arctg\ x$

2. Find the differential of a function:

$y = x^2+\frac{1}{3}x^3-\frac{x^4}{4}$

3. Calculate the approximate value of the function at a point

$$y=\frac{1}{\sqrt[6]{x}}\ ,\ x=1{,}02$$

VARIANT 10

1. Find the derivative of a complex function:

$y = \arcsin\sqrt{x}$

2. Find the differential of a function:

$y = \frac{3x}{1+x^2}$

3. Calculate the approximate value of the function at a point

$y = x^5 - x^3 + 2$, x= 0,99

VARIANT 11

1. Find the derivative of a complex function:

$y=(x+1)e^{-2x}$

2. Find the differential of a function:

$y = (x-3)^2(x-2)$

3. Calculate the approximate value of the function at a point

$y=\frac{x^2-1}{x^3+1}$, x= 2,1

VARIANT12

1. Find the derivative of a complex function:

$y=3^{\sin x}$

2. Find the differential of a function:

$y = \ln(x^2+9)$

3. Calculate the approximate value of the function at a point

$y=\frac{1}{\sqrt[3]{x}}$, x= 0,9

VARIANT 13

1. Find the derivative of a complex function:

$y=\sqrt{1+\sin 4x}$

2. Find the differential of a function:

$y = \frac{3-x^2}{x+2}$

3. Calculate the approximate value of the function at a point

$y = \ln x$

$x= 0,9$