

The image shows a screenshot of the Visual Studio Code editor with a C++ file named `compMATH.cpp` open. The code is as follows:

```
#include <iostream>
using namespace std;
int main()
{
    float x = 1.666;
    for (int i = 0; i < 10; i++) {
        x = x - ((x * x * x - (3 * x) + 1) / (3 * (x * x)));
    }
    cout << x;
}
```

The program is being debugged, and the output console (Консоль отладки Microsoft Visual Studio) shows the result of the calculation:

```
1.53209
C:\Users\mahke\source\repos\compMA
Нажмите любую клавишу, чтобы закры
```

ex 2.5

i)  $x^3 - 3x + 1 = 0$

$f(1) = -1$

$f(2) = 3$

$f' = 3x^2 - 3$

$f(x) < 2$   $x_1 = 2 - \frac{3}{9} = \frac{5}{3}$

$x_2 = \frac{5}{3} - \frac{\frac{17}{27}}{\frac{16}{3}} =$

$= 1,548$

$x_3 = 1,548 - \frac{0,065}{4,188} =$

$(1,532)$

iv)

$3x^3 - 9x^2 + 8 = 0$

$f(1) = 2$

$f(2) = -4$

$f' = 9x^2 - 18x$

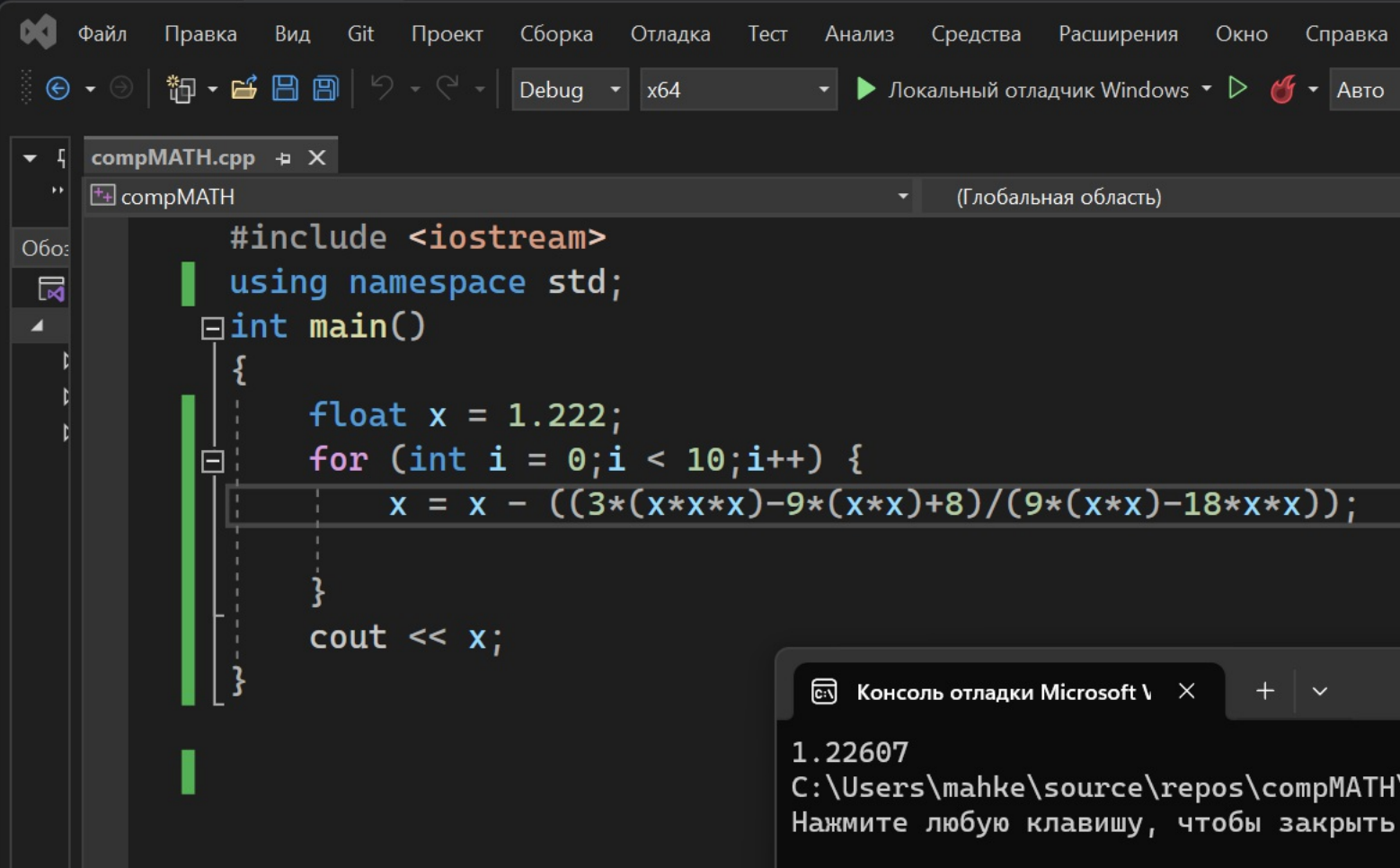
$2 < f(x) < 1$

$x_0 = 1$

$x_1 = 1 - \frac{2}{-9} = \frac{11}{9}$

$x_2 = \frac{11}{9} - \frac{f(x_1)}{f'(x_1)} = 1,226$

$(x_3 = 1,226)$



2.5  
N2

$$i) \quad x^4 + x^3 - 7x^2 - 2x + 5 = 0 \quad 2 < f(x) < 3$$

$$f'(x) = 4x^3 + 3x^2 - 14x - 1$$

$$x_0 = 2$$

$$x_1 = 2 - \frac{f(2)}{f'(2)} = 1.9767$$

$$x_2 = x_1 - \frac{f(x_1)}{f'(x_1)} = 1.9959$$

$$x_3 = 1.9962$$

$$x_4 = 1.8564$$

$$ii) \quad x^5 - 5x^2 + 3 = 0 \quad x_0 = 2 \quad \frac{2^5 - 5 \cdot 2^2 + 3}{5 \cdot 2^4 - 20} = 1.75$$

$$f'(x) = 5x^4 - 10x$$

$$x_1 = 2 - \frac{2^5 - 5 \cdot 2^2 + 3}{5 \cdot 2^4 - 20} = 1.75$$

$$f(1) = -1 \quad 1 < f(x) < 2$$

$$f(2) = 15$$

$$x_2 = 1.610$$

$$x_3 = 1.561$$

$$x_4 = 1.551$$



compMATH.cpp X

compMATH

(Глобальная обла

```
#include <iostream>
#include <cmath>
using namespace std;
int main()
{
    float x = 2;
    for (int i = 0; i < 10; i++) {
        x = x - (pow(_Left: x, _Right: 4) + pow(_Left: x, _Right: 3));
        cout << x;
    }
}
```

145 % Проблемы не найдены.

Вывод

Показать выходные данные из: Сборка

The screenshot shows a C++ IDE with the following menu bar: Файл, Правка, Вид, Git, Проект, Сборка, Отладка, Тест, Анализ, Средства, Расширения, Окно, Справка. The toolbar includes icons for file operations, a dropdown menu, and buttons for 'Debug' and 'x64'. The main editor window is titled 'compMATH.cpp' and contains the following code:

```
#include <iostream>
#include <cmath>
using namespace std;
int main()
{
    float x = 1.75;
    for (int i = 0; i < 10; i++) {
        x = x - (pow(_Left: x, _Right: 5) - 5 * pow(_Left: x, _Right: 4));
        cout << x;
    }
}
```

The code calculates the sum of a series. The variable `x` is initialized to 1.75. A `for` loop runs from `i = 0` to `i = 9`. In each iteration, `x` is updated to `x - (x^5 - 5 * x^4)`. The result is printed using `cout << x;`.

2.

Ex 3.4

№6

$$x_0 = 0$$

$$y_0 = 0$$

$$z_0 = 0$$

ex 3.4

$$10x + y + z = 12$$

$$2x + 10y + z = 13$$

$$2x + 2y + 10z = 14$$

$$x_1 = \frac{1}{10} \cdot (12 - 0 - 0) = \frac{12}{10}$$

$$y_1 = \frac{1}{10} \cdot (13 - 2 \cdot \frac{12}{10} - 0) = 1.06$$

$$z_1 = \frac{1}{10} \cdot (14 - 2 \cdot \frac{12}{10} - 2 \cdot 1.06) = 1.22$$

...

$$\begin{matrix} x = 1 \\ y = 1 \\ z = 1 \end{matrix}$$

COMPmath Version control

Project

- COMPmath C:\Users\mahke\IdeaProjects\COMPmath
  - .idea
  - out
  - src
    - Main
    - .gitignore
    - COMPmath.iml
  - External Libraries
  - Scratches and Consoles

Main.java

```

1 public class Main {
2     public static void main(
3         float x = 0;
4         float y = 0;
5         float z = 0;
6         int a1 = 10;
7         int b1 = 1;
8         int c1 = 1;
9         int a2 = 2;
10        int b2 = 10;
11        int c2 = 1;
12        int a3 = 2;
13        int b3 = 2;
14        int c3 = 10;
15        int d1 = 12;
16        int d2 = 13;
17        int d3 = 14;
18        for (int i = 0; i <

```

```
19         for (int j = 0; j < 10; j++)
20             x = ((float) Math.random()) * 10;
21             y = ((float) Math.random()) * 10;
22             z = ((float) Math.random()) * 10;
23         }
24         System.out.println("x: " + x + " y: " + y + " z: " + z);
25     }
26
27 }
28 }
```

Run Main x



```
C:\Users\mahke\.jdk\openjdk-19.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\
1.00872 1.01612 0.999416
0.9999704 0.99991447 1.0000695
0.9999997 0.9999998 0.99999934
1.0 1.0 1.0
1.0 1.0 1.0
1.0 1.0 1.0
1.0 1.0 1.0
```





27

$$\begin{cases} 83x_1 + 11x_2 + 4x_3 = 95 \\ 7x_1 + 52x_2 + 13x_3 = 104 \\ 3x_1 + 8x_2 + 29x_3 = 71 \end{cases}$$

$$\begin{aligned} x_0 &= 0 \\ y_0 &= 0 \\ z_0 &= 0 \end{aligned}$$

$$x_1 = \frac{1}{83} | 95 \quad 11 \quad 4 |$$

$$x_1 = \frac{1}{83} | 95 \quad 11 \quad 4 |$$

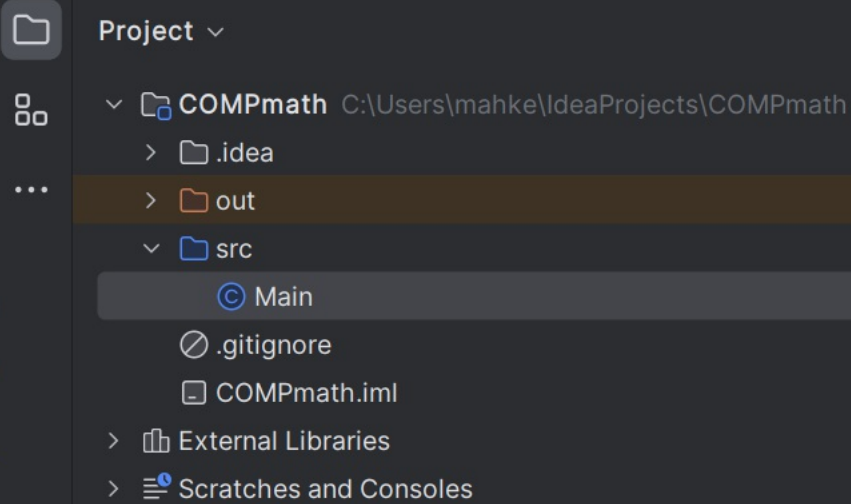
$$x_1 = \frac{1}{83} (95 - 0 - 0) = \frac{95}{83}$$

$$x_2 = \frac{1}{52} (104 - 7 \cdot \frac{95}{83} - 0) = \frac{152}{83}$$

$$x_3 = \frac{1}{29} (71 - 3 \cdot \frac{95}{83} - 8 \cdot \frac{152}{83}) = \frac{1990}{83}$$

$$\begin{aligned} x_1 &= 1.058 \\ x_2 &= 1.367 \\ x_3 &= 1.962 \end{aligned}$$

computer code...



Main.java x

```
1 public class Main {
2     public static void main(
3         float x = 0;
4         float y = 0;
5         float z = 0;
6         int a1 = 83;
7         int b1 = 11;
8         int c1 = -4;
9         int a2 = 7;
10        int b2 = 52;
11        int c2 = 13;
12        int a3 = 3;
13        int b3 = 8;
14        int c3 = 29;
15        int d1 = 95;
16        int d2 = 104;
17        int d3 = 71;
18        for (int i = 0; i < 1
19            for (int j = 0; j
20                x = ((float)
21                y = ((float)
22                z = ((float)
23            }
24            System.out.print
25        }
26    }
27 }
28 }
```

Run Main x



```
C:\Users\mahke\.jdk\openjdk-19.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\
1.0517564 1.369263 1.9617459
1.0579276 1.3671646 1.9616863
1.0579268 1.3671652 1.9616861
1.0579268 1.3671652 1.9616861
1.0579268 1.3671652 1.9616861
```