

TF3A6

SIMPSON 1/3 NO 1

The image shows a Visual Studio Code editor window with a Python file named `Simpson13.py`. The code implements Simpson's 1/3 rule for numerical integration. The function `f(x) = x^4` is defined, and the `simpson13` function uses it to calculate the integral from `lower_limit` to `upper_limit` with `sub_interval` subintervals.

```
1 print('')
2 print('')
3 print('Nama : Devi Harumia')
4 print('202010225258')
5 print('TF3A6')
6 print('')
7 print('')
8
9 # Metode Simpson 1/3
10
11 from math import e # Untuk memanggil bilangan eksponen natural (e)
12 # Definisikan Fungsi yang akan di integralkan
13 def f(x):
14     return x**4
15
16 # Implementasi Metode Simpson 1/3
17 def simpson13(x0,xn,n):
18     # hitung ukuran h/ selisih x1 dan x1+1
19     h = (xn - x0) / n
20
21     # Tentukan Jumlah
22     integration = f(x0) + f(xn)
23
24     for i in range(1,n):
25         k = x0 + i*h
26
27         if i%2 == 0:
28             integration = integration + 2 * f(k)
29         else:
30             integration = integration + 4 * f(k)
31
32     # Final Integrasi
33     integration = integration * h/3
34
35     return integration
36
37 # Sesi Input
38 lower_limit = float(input("Masukan Batas Bawah Daerah Integral: "))
39 upper_limit = float(input("Masukan Batas Atas Daerah Integral: "))
40 sub_interval = int(input("Masukan Jumlah Pias: "))
```

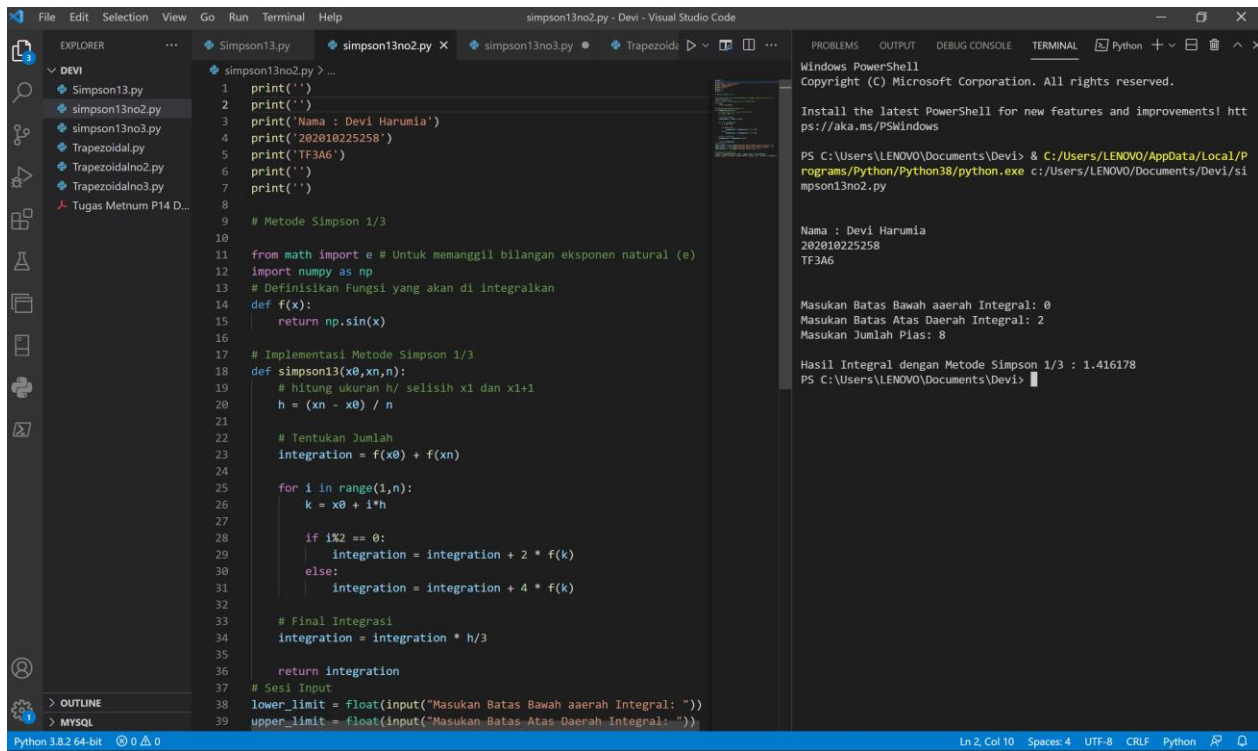
The terminal output shows the results of the program execution:

```
Nama : Devi Harumia
202010225258
TF3A6

Masukan Batas Bawah Daerah Integral: 0
Masukan Batas Atas Daerah Integral: 2
Masukan Jumlah Pias: 8

Hasil Integral dengan Metode Simpson 1/3 : 6.401042
PS C:\Users\LENDVO\Documents\Devi>
```

SIMPSON 1/3 NO 2



The image shows a Visual Studio Code editor with a Python file named `simpson13no2.py` open. The code implements Simpson's 1/3 rule for numerical integration. It includes a function `f(x)` that returns $\sin(x)$ and a function `simpson13(x0, xn, n)` that calculates the integral. The script prompts the user for the lower limit, upper limit, and the number of intervals (n). The output in the terminal shows the results of the integration.

```
1 print('')
2 print('')
3 print('Nama : Devi Harumia')
4 print('202010225258')
5 print('TF3A6')
6 print('')
7 print('')
8
9 # Metode Simpson 1/3
10
11 from math import e # Untuk memanggil bilangan eksponen natural (e)
12 import numpy as np
13 # Definisikan fungsi yang akan di integralkan
14 def f(x):
15     return np.sin(x)
16
17 # Implementasi Metode Simpson 1/3
18 def simpson13(x0, xn, n):
19     # hitung ukuran h/ selisih x1 dan x1+1
20     h = (xn - x0) / n
21
22     # Tentukan Jumlah
23     integration = f(x0) + f(xn)
24
25     for i in range(1, n):
26         k = x0 + i*h
27
28         if i%2 == 0:
29             integration = integration + 2 * f(k)
30         else:
31             integration = integration + 4 * f(k)
32
33     # Final Integrasi
34     integration = integration * h/3
35
36     return integration
37
38 # Sesi Input
39 lower_limit = float(input("Masukan Batas Bawah aaerah Integral: "))
40 upper_limit = float(input("Masukan Batas Atas Daerah Integral: "))
```

Terminal Output:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\LENOVO\Documents\Devi> & C:/Users/LENOVO/AppData/Local/Programs/Python/Python38/python.exe c:/Users/LENOVO/Documents/Devi/simpson13no2.py

Nama : Devi Harumia
202010225258
TF3A6

Masukan Batas Bawah aaerah Integral: 0
Masukan Batas Atas Daerah Integral: 2
Masukan Jumlah Plas: 8

Hasil Integral dengan Metode Simpson 1/3 : 1.416178
PS C:\Users\LENOVO\Documents\Devi>
```

SIMPSON 1/3 NO 3

```
File Edit Selection View Go Run Terminal Help
simpson13no3.py - Dev - Visual Studio Code

EXPLORER
DEVI
  Simpson13.py
  simpson13no2.py
  simpson13no3.py
  Trapezoidal.py
  Trapezoidalno2.py
  Trapezoidalno3.py
  Tugas Metnum P14 D...

Simpson13no3.py
1 print('')
2 print('')
3 print('Nama : Devi Harumia')
4 print('202010225258')
5 print('TF3A6')
6 print('')
7 print('')
8
9 # Metode Simpson 1/3
10
11 from math import e # Untuk memanggil bilangan eksponen natural (e)
12 import numpy as np
13 # Definiskan fungsi yang akan diintegrasikan
14 def f(x):
15     return np.sqrt(1+x**2)
16
17 # Implementasi Metode Simpson 1/3
18 def simpson13(x0,xn,n):
19     # hitung ukuran h/ selisih x1 dan x1+1
20     h = (xn - x0) / n
21
22     # Tentukan Jumlah
23     integration = f(x0) + f(xn)
24
25     for i in range(1,n):
26         k = x0 + i*h
27
28         if i%2 == 0:
29             integration = integration + 2 * f(k)
30         else:
31             integration = integration + 4 * f(k)
32
33     # Final Integrasi
34     integration = integration * h/3
35
36     return integration
37
38 # Sesi Input
39 lower_limit = float(input("Masukan Batas Bawah aarah Integral: "))
40 upper_limit = float(input("Masukan Batas Atas Daerah Integral: "))

TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\LENOVO\Documents\Devi> & C:/Users/LENOVO/AppData/Local/Programs/Python/Python38/python.exe c:/Users/LENOVO/Documents/Devi/simpson13no3.py

Nama : Devi Harumia
202010225258
TF3A6

Masukan Batas Bawah aarah Integral: 0
Masukan Batas Atas Daerah Integral: 2
Masukan Jumlah Pias: 8

Hasil Integral dengan Metode Simpson 1/3 : 2.957883
PS C:\Users\LENOVO\Documents\Devi>
```

TRAPEZOIDAL NO 1

```
File Edit Selection View Go Run Terminal Help
Trapezoidal.py - Dev - Visual Studio Code

EXPLORER
DEVI
  Simpson13.py
  simpson13no2.py
  simpson13no3.py
  Trapezoidal.py
  Trapezoidalno2.py
  Trapezoidalno3.py
  Tugas Metnum P14 D...

Trapezoidal.py
1 print('')
2 print('')
3 print('Nama : Devi Harumia')
4 print('202010225258')
5 print('TF3A6')
6 print('')
7 print('')
8
9 # Metode Trapezoidal
10
11 from math import e #Untuk memanggil bilangan eksponen natural (e)
12
13 # Definiskan fungsi yang akan diintegrasikan
14 def f(x):
15     return x**4
16
17 # Implementasi Metode Trapezoidal
18 def trapezoidal(x0,xn,n):
19     # hitung ukuran h/ selisih xi dan xi+1
20     h = (xn - x0) / n
21
22     # Tentukan Jumlah
23     integration = f(x0) + f(xn)
24
25     for i in range(1,n):
26         k = x0 + i*h
27         integration = integration + 2 * f(k)
28
29     # Final Integrasi
30     integration = integration * h/2
31
32     return integration
33
34 # Sesi Input
35 lower_limit = float(input("Masukan Batas Bawah Daerah Integral: "))
36 upper_limit = float(input("Masukan Batas Atas Daerah Integral: "))
37 sub_interval = int(input("Masukan Jumlah Pias: "))
38
39 # Memanggil Trapezoidal

TERMINAL
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\LENOVO\Documents\Devi> & C:/Users/LENOVO/AppData/Local/Programs/Python/Python38/python.exe c:/Users/LENOVO/Documents/Devi/Trapezoidal.py

Nama : Devi Harumia
202010225258
TF3A6

Masukan Batas Bawah Daerah Integral: 0
Masukan Batas Atas Daerah Integral: 2
Masukan Jumlah Pias: 8

Hasil Integral dengan Metode Trapezoidal : 6.566406
PS C:\Users\LENOVO\Documents\Devi>
```

TRAPEZOIDAL NO 2

```
1 print('')
2 print('')
3 print('Nama : Devi Harumia')
4 print('202010225258')
5 print('TF3A6')
6 print('')
7 print('')
8
9 # Metode Trapezoidal
10
11 from math import e #Untuk memanggil bilangan eksponen natural (e)
12 import numpy as np
13
14 # Definiskan fungsi yang akan diintegralkan
15 def f(x):
16     return np.sin(x)
17
18 # Implementasi Metode Trapezoidal
19 def trapezoidal(x0,xn,n):
20     # hitung ukuran h/ selisih xi dan xi+1
21     h = (xn - x0) / n
22
23     # Tentukan Jumlah
24     integration = f(x0) + f(xn)
25
26     for i in range(1,n):
27         k = x0 + i*h
28         integration = integration + 2 * f(k)
29
30 # Final Integrasi
31 integration = integration * h/2
32
33 return integration
34
35 # Sesi Input
36 lower_limit = float(input("Masukan Batas Bawah Daerah Integral: "))
37 upper_limit = float(input("Masukan Batas Atas Daerah Integral: "))
38 sub_interval = int(input("Masukan Jumlah Pias: "))
39
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS C:\Users\LENOVO\Documents\Devi> & C:/Users/LENOVO/AppData/Local/Programs/Python/Python38/python.exe c:/Users/LENOVO/Documents/Devi/Trapezoidalno2.py

Nama : Devi Harumia
202010225258
TF3A6

Masukan Batas Bawah Daerah Integral: 0
Masukan Batas Atas Daerah Integral: 2
Masukan Jumlah Pias: 8

Hasil Integral dengan Metode Trapezoidal : 1.488763
PS C:\Users\LENOVO\Documents\Devi>

TRAPEZOIDAL NO 3

```
1 print('')
2 print('')
3 print('Nama : Devi Harumia')
4 print('202010225258')
5 print('TF3A6')
6 print('')
7 print('')
8
9 # Metode Trapezoidal
10
11 from math import e #Untuk memanggil bilangan eksponen natural (e)
12 import numpy as np
13
14 # Definiskan fungsi yang akan diintegralkan
15 def f(x):
16     return np.sqrt(1+x**2)
17
18 # Implementasi Metode Trapezoidal
19 def trapezoidal(x0,xn,n):
20     # hitung ukuran h/ selisih xi dan xi+1
21     h = (xn - x0) / n
22
23     # Tentukan Jumlah
24     integration = f(x0) + f(xn)
25
26     for i in range(1,n):
27         k = x0 + i*h
28         integration = integration + 2 * f(k)
29
30 # Final Integrasi
31 integration = integration * h/2
32
33 return integration
34
35 # Sesi Input
36 lower_limit = float(input("Masukan Batas Bawah Daerah Integral: "))
37 upper_limit = float(input("Masukan Batas Atas Daerah Integral: "))
38 sub_interval = int(input("Masukan Jumlah Pias: "))
39
40 # Memanggil Trapezoidal
41 result = trapezoidal(lower_limit, upper_limit, sub_interval)
42
```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

PS C:\Users\LENOVO\Documents\Devi> & C:/Users/LENOVO/AppData/Local/Programs/Python/Python38/python.exe c:/Users/LENOVO/Documents/Devi/Trapezoidalno3.py

Nama : Devi Harumia
202010225258
TF3A6

Masukan Batas Bawah Daerah Integral: 0
Masukan Batas Atas Daerah Integral: 2
Masukan Jumlah Pias: 8

Hasil Integral dengan Metode Trapezoidal : 2.962545
PS C:\Users\LENOVO\Documents\Devi>