

Newton Raphson

Exercise

Find the root of the equation from the equation $f(x)$ below by using **Newton Raphson** method:

$$f(x): 8x^5 - 10x^4 + x^3 + 2x^2 + 9x + 13$$

- How many **iterations** are required to find the root of the equation?
- With first guess of the value is 5
- With **tolerate error** is **0xx** with **xx** are the last digits of your NIM (e.g., 2501234531, then the last digits of the NIM are **31**)
- With the number of the **max iterations** is **50**

Task:

Print the result of the **root** in **each iteration**. If the iteration is **over the max** iterations the **print error message**

```
With Newton Raphson
Iteration # 1 new root = 4.059394603206213
Iteration # 2 new root = 3.309726207472683
Iteration # 3 new root = 2.7136779793915182
Iteration # 4 new root = 2.2413748455764324
Iteration # 5 new root = 1.8681343500337189
Iteration # 6 new root = 1.5710520173340736
Iteration # 7 new root = 1.3209905431493136
Iteration # 8 new root = 1.0434622532636735
Iteration # 9 new root = -10.90447641710416
Iteration # 10 new root = -8.677343307151903
Iteration # 11 new root = -6.896696235790187
Iteration # 12 new root = -5.473622728769812
Iteration # 13 new root = -4.337215836274071
Iteration # 14 new root = -3.431169015591493
Iteration # 15 new root = -2.711260643742435
Iteration # 16 new root = -2.143778628537372
Iteration # 17 new root = -1.705118649836952
Iteration # 18 new root = -1.3827534216212092
Iteration # 19 new root = -1.1756184711815993
Iteration # 20 new root = -1.0819735176046303
Iteration # 21 new root = -1.0636334151565525
Final root answer is -1.0636334151565525
-1.0636334151565525
```