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MATH 400-01

2/17/2022

## Homework 02

5.  $f(x) = x^4 - 5$ ,  $[1, 2]$ ,  $10^{-6}$

Apply Secant Method:

$$x_{n+1} = x_n - f(x_n) \frac{(x_n - x_{n-1})}{f(x_n) - f(x_{n-1})}$$

We have Python code "question\_05.py".

Let  $f = x^4 - 5$ ,

$x_0 = 1$ ,

$x_1 = 2$ ,

$\Delta = 10^{-6}$

$N_{\max} = 100$

$\Rightarrow$  We got the root = 1.4953487812075685 with  
tolerance  $10^{-6}$ .

The program is in "question\_05.py"

It will output both number of iterations and the  
estimate of the root with tolerance  $10^{-6}$ .

```
PS D:\Math\MATH 400> python -u "d:\Math\MATH 400\02_Homework\homework_02\question_05.py"
```

```
Number of iterations = 7
```

```
An estimate of the root is 1.4953487812075685
```