

# Nivelamento de programação para termodinâmica

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## Parte 3: python científico

### Métodos numéricos:

biseção (`from scipy.optimize import bisect`)

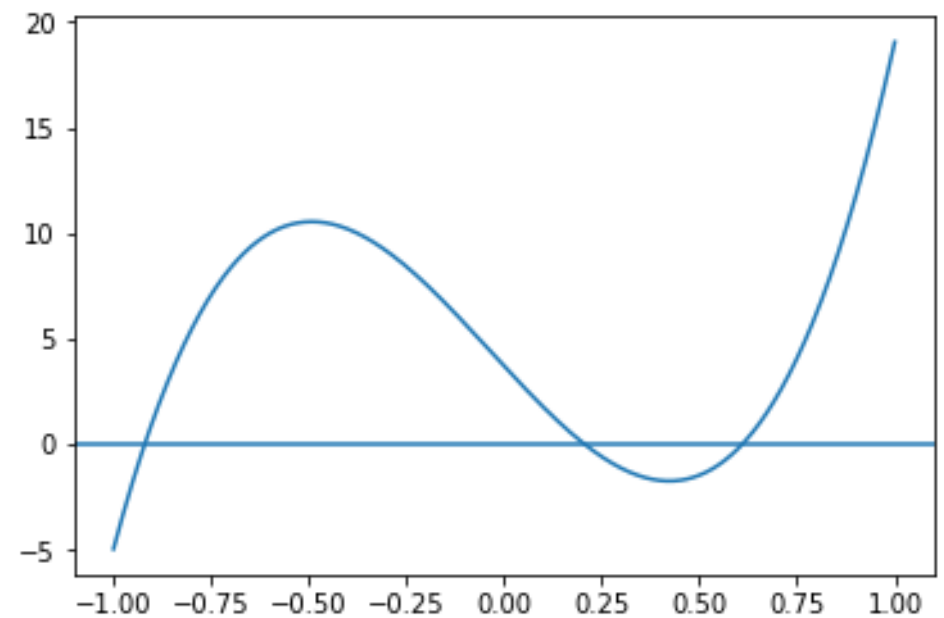
polinômios (`from numpy import roots`)

roots

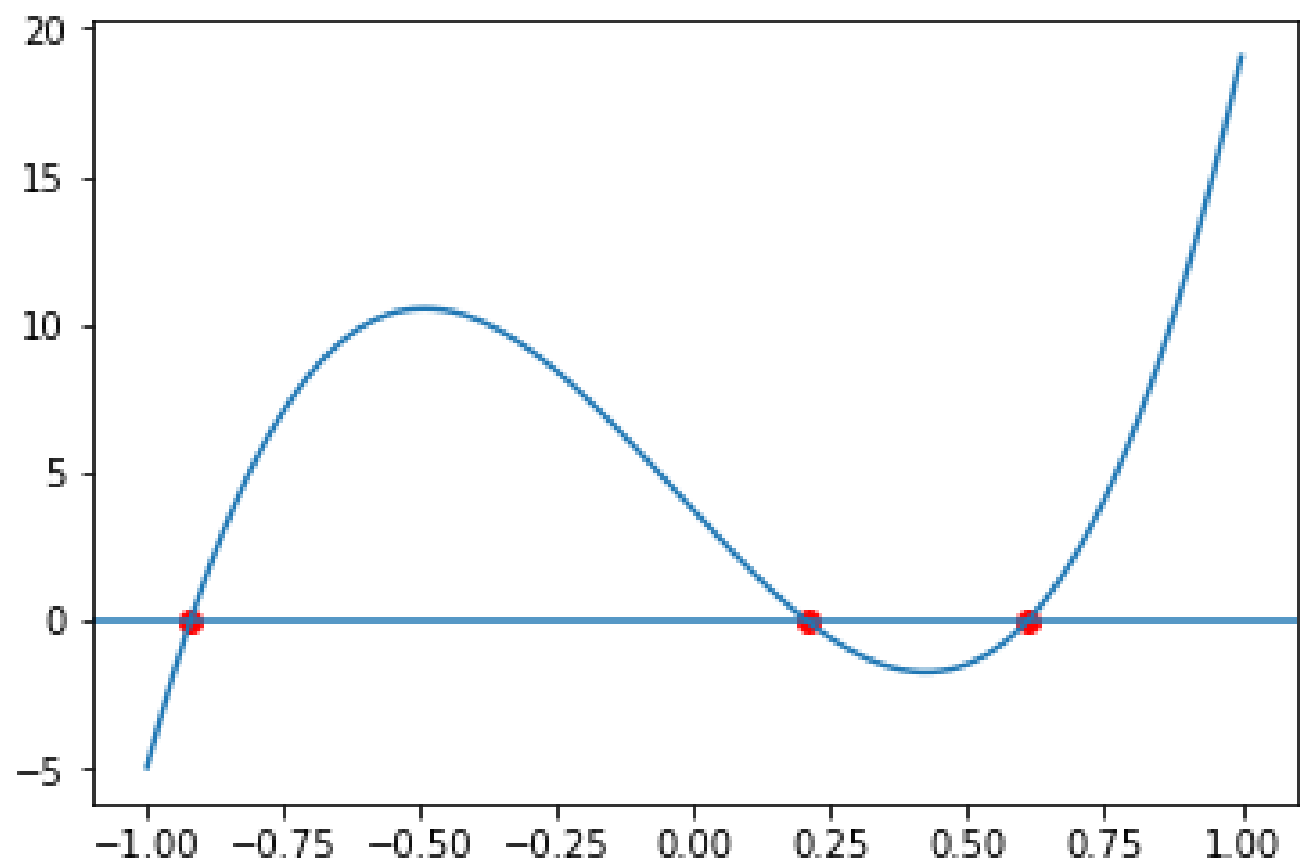
```
a=32
b=3.34
c=-20
d=3.7

def y(x):
    return a*x**3+b*x**2+c*x+d

x=np.linspace(-1,1,1000)
```



```
raizes=np.roots((a,b,c,d))
```

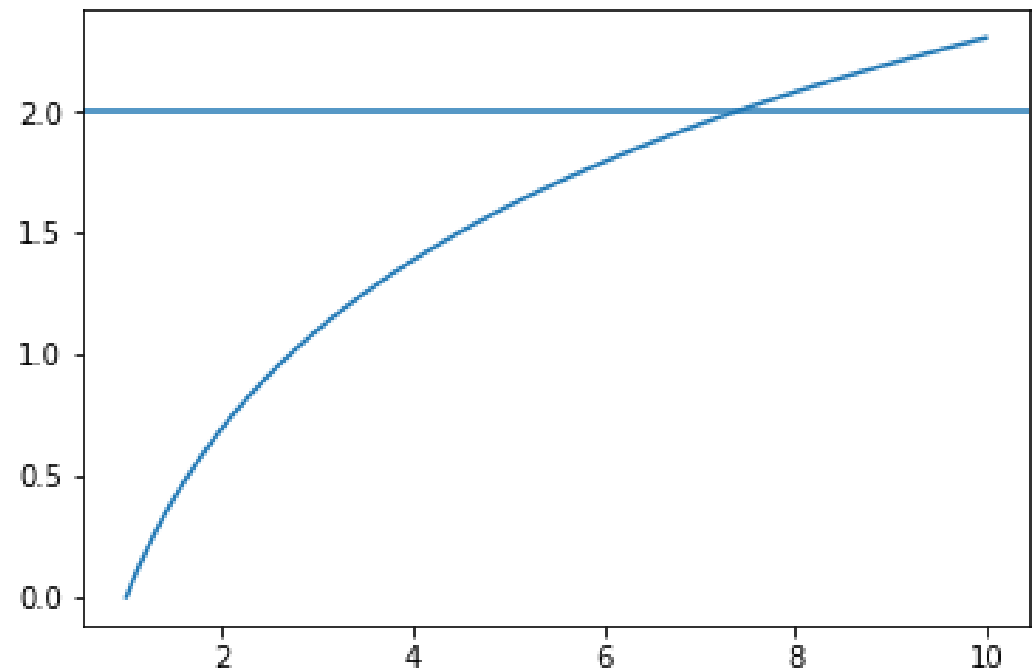


bisect

```
def f(x):  
    return np.log(x)
```

```
goal=2.
```

```
def res(x):  
    return f(x)-goal
```



```
from scipy import optimize as opt  
xsol=opt.bisect(f=res,a=2.,b=10)
```

