

Codes du TP5

```
import numpy as np
import matplotlib.pyplot as plt
```

```
def f1(x):
    return x**2
```

```
def f2(x):
    return np.sqrt(x)
```

```
x1=np.arange(-2,2,0.1)
x2=np.arange(0,5,0.01)
plt.plot(x1,f1(x1))
plt.plot(x2,f2(x2))
plt.show()
```

#Exercice 2.1

```
def f(x):
    return np.log((np.exp(x)-1)/x)
```

```
x3=np.arange(0.0001,10,0.001)
plt.plot(x3,f(x3))
plt.show()
```

```
def suite_pb1(n):
    u=1
    for k in range(n):
        u=f(u)
    return u
```

```
def suite_pb1bis(n):
    u=np.zeros(n+1)
    u[0]=1
    for k in range(n):
        u[k+1]=f(u[k])
    return u
```

```
U1=suite_pb1bis(15)
plt.plot(U1,'+')
plt.show()
```

#Exercice 2.2

```
def suite_pb2(n):
    a=np.sqrt(3)/2
    b=1/2
    for k in range(n):
        a=np.sqrt((1-b)/2)
        b=np.sqrt((1+b)/2)
    return a,b

def approxpi(n):
    a,b=suite_pb2(n)
    return 9*(2**n)*(a/(2+b)),(2**n)*(2*a+a/b)
```

#Exercice 2.3

```
def suite_DM3(n):
    S=0
    for k in range(1,n+1):
        S=S+np.sin(k/n**2)
    return S

def suite_DM3bis(n):
    S=np.zeros(n)
    for p in range(1,n+1):
        S[p-1]=suite_DM3(p)
    return S

S=suite_DM3bis(15)
plt.plot(S,'+')
plt.show()
```