ejer5,15

June 4, 2020

[1]:
```
from google.colab import drive
drive.mount('/content/gdrive/')
import sys
sys.path.append('/conten/gdrive/My Drive/metod')
```

```
Go to this URL in a browser: https://accounts.google.com/o/oauth2/auth?client_id
=947318989803-6bn6qk8qdgf4n4g3pfee6491hc0brc4i.apps.googleusercontent.com&redire
ct_uri=urn%3aietf%3awg%3aoauth%3a2.0%3aoob&response_type=code&scope=email%20http
s%3a%2f%2fwww.googleapis.com%2fauth%2fdocs.test%20https%3a%2f%2fwww.googleapis.c
om%2fauth%2fdrive%20https%3a%2f%2fwww.googleapis.com%2fauth%2fdrive.photos.reado
nly%20https%3a%2f%2fwww.googleapis.com%2fauth%2fpeopleapi.readonly

Enter your authorization code:
ůůůůůůůůůů
Mounted at /content/gdrive/
```

[2]:
```
import numpy
from math import tanh, cosh
from pylab import plot, linspace, legend

print('librerias')
```

```
librerias
```

[3]:
```
def f(x):                                   #def. función dependiente x
  return 1+((1/2)*tanh(2*x))

def df(x):                                  #def. función derivada con respecto a␣
 ↪x
  h = 1e-5                                  # tamaño de paso
  return (f(x + 0.5 * h) - f(x - 0.5 * h)) / h

def g(x):                                    #def. derivada de f analíticamente
  return 1 /(cosh(2*x))** 2

x = linspace(-2, 2, 100)                     #intervalo de x, 100 pasos de -2 a 2
```

```
dF = list(map(df, x))                          #valores para df evaluados en x
G = list(map(g, x))                            #valores para g evaluados en x

plot(x, dF, 'o', label= 'númerica')            #grafica los resultados, df y g vs x
plot(x, G, label='analítica')

legend()
```

[3]: <matplotlib.legend.Legend at 0x7fa52fbfeda0>