ejercicio5_15

June 3, 2020

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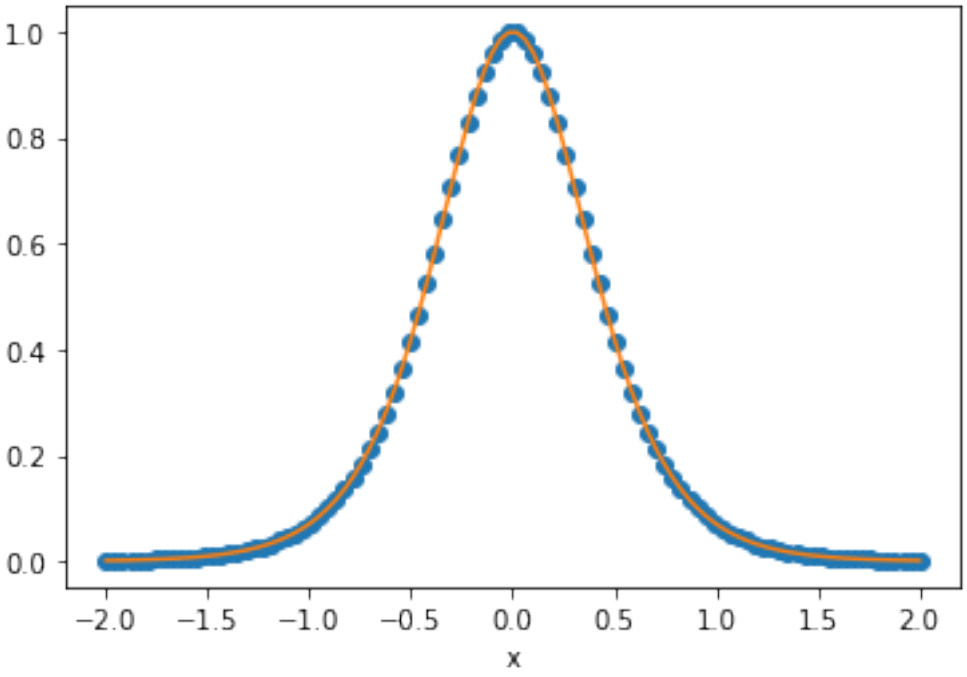
```
from numpy import loadtxt, sum, array, linspace, exp, arange, pi, cos, sin,␣
 ↪sqrt, empty, log
from math import factorial, tanh, cosh

from pylab import plot, show, xlabel, ylabel, imshow, hot, xlim, ylim, gray
```

[0]:
```
# ## Exercise 5.15
def f(x):
  return 1 + 0.5 * tanh(2*x)

# # calcular df / dx usando el método de diferencia central
def df_dx(x):
  h = 10 ** -5  # step size
  return (f(x + 0.5 * h) - f(x - 0.5 * h)) / h

def g(x):

# derivada analítica de f (x) anterior
  return 1 / (cosh(2*x) ** 2)

xvals = linspace(-2, 2, 100)
dfvals = list(map(df_dx, xvals))
gvals = list(map(g, xvals))

plot(xvals, dfvals, 'o')
plot(xvals, gvals)
xlabel('x')
show()
```



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