import matplotlib.pyplot as plt

from numpy import \*

import sympy as sp

from math import \*

def taylor(x):

y = 0

d1 = sp.diff(f, x)

d2 = sp.diff(d1, x)

d3 = sp.diff(d2, x)

print("d1=", d1, "d2=", d2, "d3=", d3)

y += f + d1\*x + d2\*(x-0)\*\*2/2 + d3\*(x-0)\*\*3/6

print("y=", y)

return y

x = sp.symbols("x")

f = sp.x^2\*sin(2\*x)

p1 = sp.plot(f, taylor(x), (x, -5, 5), label="Taylor")

plt.ledend()

plt.grid()

plt.show()

