import matplotlib.pyplot as pyplot
import numpy

from matplotlib import rc
rc("font",family="serif")

%matplot inline

# define values

l = 10
a = 1
s = 0.2
prod\_elast = 0.33
d = 0.1

# define function

c = numpy.linspace(0,40,100)
f = []
inv = []
dep = []

i = 0
while i < len(c):
 f.append(s\*a\*c[i]\*\*prod\_elast\*l\*\*(1-prod\_elast)-d\*c[i])
 inv.append(s\*a\*c[i]\*\*prod\_elast\*l\*\*(1-prod\_elast))
 dep.append(-d\*c[i])

 i += 1

# plot phase diagrams

pyplot.plot(c,f, color = "red")
pyplot.plot(c,inv, color = "blue")
pyplot.plot(c,dep, color = "green")
pyplot.axhline(y=0, color = "grey")
pyplot.grid()

pyplot.title("Phasendiagramm")
pyplot.xlabel("K")
pyplot.ylabel("dK/dt")

pyplot.legend(["dK/dt", "Investitionen", "Abschreibungen"])

pyplot.show()