

Complex Networks: Quiz #11

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Problem 1

Draw a curve of the size of the giant component in a random graph.

$$S = 1 - e^{-cS}$$

X axis : average degree c

Y axis : size of giant component S

Answer 1

```
import matplotlib.pyplot as plt
from scipy import optimize, exp

x = range(500)
y = [0] * 500

for i in x:
    if i <= 100:
        y[i] = 0
    else:
        y[i] = optimize.newton(lambda x: x-1+exp(- i/100 *x) , 1)
plt.plot(list(map(lambda x: x * 0.01, x)), y)
```

The result is:

