Task7

June 20, 2020

0.1 Task 7

[20]:
```
import random
import numpy as np
import matplotlib.pyplot as plt
import math
```

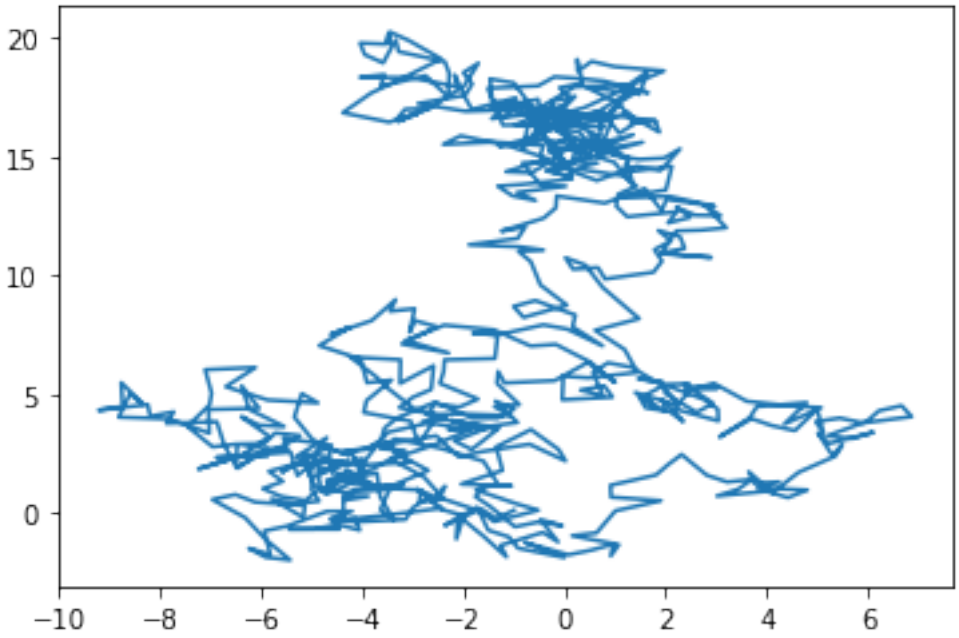
[21]:
```
def task7(steps,x,y):
    theta_vals = [0]
    r_vals = [0, 0.5, 1]
    theta_val = 0
    x_vals, y_vals = [], []
    x,y = 0,0

    for i in range(steps):
        step = random.choice(r_vals)
        theta_step = random.uniform(0, 2*math.pi)
        x += step*math.cos(theta_step)
        y += step*math.sin(theta_step)
        x_vals.append(x)
        y_vals.append(y)
        if math.sqrt(x**2+y**2) > 100:
            x = -x
            y = -y

    return x_vals, y_vals
```

[22]:
```
steps = 1000
stepnum = [i for i in range(steps)]
x_vals, y_vals = task7(steps, 0, 0)
```

[24]:
```
plt.plot(x_vals, y_vals)
plt.show()
```


20
15
10
5
0
−10
−8
−6
−4
−2
0
2
4
6

[ ]:

[ ]: