task3

June 20, 2020

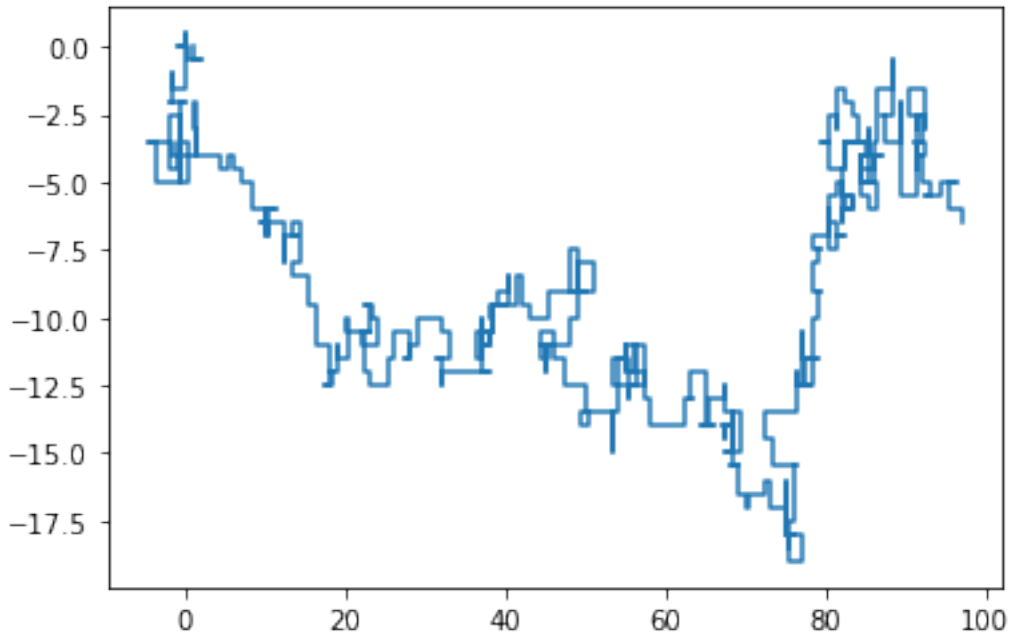
0.1 Task 3

[21]:
```
import random
import numpy as np
import matplotlib.pyplot as plt
import math
from mpl_toolkits.mplot3d import Axes3D
```

[22]:
```
def task3(steps,x,y, pidiv):
    theta_vals = [0]
    r_vals = [0, 0.5, 1]
    theta_val = 0
    x_vals, y_vals = [], []
    x,y = 0,0

    for i in range(pidiv):
        theta_val += 2*math.pi/pidiv
        theta_vals.append(theta_val)

    for i in range(steps):
        step = np.random.choice(r_vals)
        theta_step = np.random.choice(theta_vals)
        x += step*math.cos(theta_step)
        y += step*math.sin(theta_step)
        if math.sqrt(x**2+y**2) > 100:
            x = -x
            y = -y

        x_vals.append(x)
        y_vals.append(y)

    return x_vals, y_vals
```

[35]:
```
steps = 1000
stepnum = [i for i in range(steps)]
x_vals, y_vals = task3(steps, -100, 0, 4)
```

[36]:
```
plt.plot(x_vals, y_vals)
plt.show()
```



[ ]:
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