

```

1 # Python-Program for 2D Visualization (Monte-Carlo-Integration).
2
3 from numpy import random
4 import numpy as np
5 import matplotlib.pyplot as plt
6
7 a = 1; b = 2; c = 2; d = 3; N = 300
8
9 def f(x,y):
10     return x**2 + y**2
11
12 plt_vals = []
13
14 for i in range(N):
15     ar = np.zeros(N)
16     br = np.zeros(N)
17     for i in range (len(ar)):
18         ar[i] = random.uniform(a,b)
19         br[i] = random.uniform(c,d)
20     integral = 0.0
21     for i in ar:
22         for j in br:
23             integral += f(i,j)
24     ans = (((b-a)*(d-c))/((float(N))*float(N)))*integral
25     plt_vals.append(ans)
26
27 plt.title("Distributions of areas calculated")
28 plt.hist (plt_vals, bins=25, color='green',ec="orange")
29 plt.xlabel("Areas")
30 plt.show()
31

```

