

Assignment 2. Random numbers

Marks 10

Posted on 18.08.2022 and due on 28.08.2022 midnight

1. Write your own LCG random generator with the following set of parameters $a = 1103515245$, $c = 12345$, $m = 32768$. Use it to solve the problems below. Remember to store your LCG code in a library file and it must not appear explicitly in the codes you write for the following problems. [2]
2. Calculate the volume of that part of a sphere of unit radius, centered at origin, which is in the first quadrant by throwing method. [3]
3. Simulate a 2-dimensional random walk of $N = 300, 600, 900$ steps, each time starting from the origin. For each walk of different steps use different seeds. Calculate the r.m.s. distance that the walker moves. Compare it with the net displacement. Plot the walks. [5]