

HW4

Calculate the volume of a unit d -dimensional sphere at $d = 4$, $d = 6$, $d = 8$, $d = 10$ and $d = 12$ using the Monte-Carlo method. Can you guess a general formula for the volume of d -dimensional sphere? Hint: it is $\pi^{d/2}$ divided by some simple function of d which is easy to guess if you consider even d .

P.S. A unit d -dimensional sphere is defined as a set $\{x_1, x_2, \dots, x_d\}$ such that $x_1^2 + x_2^2 + \dots + x_d^2 \leq 1$.