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MONTE CARLO METHOD

The volume of an ellipsoid is analytically estimated using the Monte Carlo Simulation. A cuboid of dimensions l = 2.0, b = 3.0 and d = 4.0 was considered as a reference volume. The volume of the ellipsoid with axes of same dimension is to be estimated. 10 trials with step number N = 100, 500, 1000, 2000, 5000, 10000, 15000, 20000, 30000, 40000 were simulated using the Monte_Carlo method and the volume was obtained. A comparison graph of analytical volume against actual volume of the ellipsoid was plotted. As the N increases, the simulated volume was found closer to the actual volume. A graph which plotted fractional error against N agreed that fractional error $\rightarrow 0$ as $N \rightarrow \infty$.