Sum for random sequence

[Award] **8 pts**

[Category] **Probability**

A sequence generator start generating independent and identically distributed random variables whose cumulative distribution function is



The cumulative sum is updated for every new generated number. When the sum is larger than 1, the generator stops. Let *C* denotes the count of generated numbers when it stops. For example, the probability for *C* = 3 is 7/45.

Find the expected value of *C*. Give your answer rounded to 10 digits after the decimal point.

Thanks to **baihacker** for the idea.

[Answer] **2.1781835566**