How to prove experimentally that ∞ = 3 in my definition

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ABSTRACT

In this chapter, I describe how to prove my definition, in particular, ∞=3, using random functions in EXCEL.

VERIFICATION METHOD

The random function in Windows and Excel generates random numbers greater than 0 and less than 1. The inverse of the random number is used in this study.

In this study, we displayed 100,000 f(x) =1/RAND () and checked its average value A(x). Then, we continued to refresh all 100,000 random numbers at the same time and continued the operation of observing the variation of the average value A(x).

As a result of refreshing 100 times, A(x) > 10 with a probability of 99%. From this result, it is thought that as the number of f(x) is increased as much as possible, the probability of A(x) > 10 will approach 100% as much as possible.

The probability that 10×RAND() is n≤10×RAND() **<** n+1 (0≤n<9) is 1/10.

$$C=\frac{1}{10}\times\left(\frac{1}{1}+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\frac{1}{6}+\frac{1}{7}+\frac{1}{8}+\frac{1}{9}+\frac{1}{10}\right)$$
$$from \quad my \quad definition$$
$$=\frac{2}{10}\times\left(\frac{1}{1}+\frac{6}{2}+\frac{6}{3}+\frac{16}{4}+\frac{1}{0}\right)=\frac{1}{0}\times\left(1+3+2+4+\frac{1}{0}\right)$$
$$=\infty(\infty+10)$$

$$D=\frac{1}{10}\times\left(\frac{1}{0}+\frac{1}{1}+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\frac{1}{6}+\frac{1}{7}+\frac{1}{8}+\frac{1}{9}\right)$$
$$from \quad my \quad definition$$
$$=\frac{2}{10}\times\left(\frac{1}{1}+\frac{6}{2}+\frac{6}{3}+\frac{16}{4}+\frac{1}{0}\right)=\frac{1}{0}\times\left(1+3+2+4+\frac{1}{0}\right)$$
$$=\infty(\infty+10)$$

PROOF

$$\frac{C\times\left(\frac{\infty-3}{5}\right)+1+2+3}{\infty}\le A(x)\le\frac{D\times\left(\frac{\infty-3}{5}\right)+1+2+3}{\infty}$$

$$\frac{C\times\left(\frac{\infty-3}{5}\right)}{\infty}+\alpha\le A(x)\le\frac{D\times\left(\frac{\infty-3}{5}\right)}{\infty}+\alpha$$

$$\frac{\infty(\infty+10)\times\left(\frac{\infty-3}{5}\right)}{\infty}+\alpha\le A(x)\le\frac{\infty(\infty+10)\times\left(\frac{\infty-3}{5}\right)}{\infty}+\alpha$$

$$\therefore A(x)=(\infty+10)\left(\frac{\infty-3}{5}\right)+\alpha$$

$$A(x)=(\infty+10)\left(\frac{\infty-3}{5}\right)+\alpha\ge 10$$

$$\therefore(\infty+10)\left(\frac{\infty-3}{5}\right)=10$$

$$\therefore\infty^2+7\infty-80=\infty^2+7\infty=\infty^2+2\infty=0$$

$$\therefore\infty=-2=3$$