Computation of Binomial Coefficient with Real Number

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Abstract: This paper presents a technique to compute the binomial coefficients with real numbers. This technique is used as application in computing and mathematical sciences.

Binomial Coefficient with Real Number
The binomial coefficient with real number is introduced as follows:

$$R_x^n = \frac{(x+1)(x+2)(x+3)\cdots(x+n)}{n!},$$

where n is a non-negative integer, x is any real number, and R_x^n is a binomial coefficient.

Examples for the binomial coefficient with real number are given below:

$$R_{0.072}^5 = \frac{(0.072+1)(0.072+2)(0.072+3)(0.072+4)(0.072+5)}{5!}.$$

$$R_{-2.01}^4 = \frac{(-2.01+1)(-2.01+2)(-2.01+3)(-2.01+4)}{5!}.$$

$$R_{1.5}^0 = \frac{(0+1.5)}{0!} = 1.5; \ \ R_0^3 = \frac{(0+1)(0+2)(0+3)}{3!} = 1; \ R_0^0 = \frac{(0+0)}{0!} = \frac{0}{1} = 0$$

Similarly, we can constitute other binomial coefficients with real numbers.