The raw and central moments of the analysed distributions were determined using the following methodology presented below, by substitution using the probability density function.

**1. Pearson III distribution**

To determine the raw moments of the Pearson III distribution, the following substitutions in the expression for the probability density function are required:



It is noted:

  

The cumulative function is obtained as:



Checking the condition that the integral is 1:



Thus, the first six raw moments are:













The characteristic moment of order *r* of the Pearson III distribution has the following expression:



The first six central moments (except the arithmetic mean) have the following expressions:













Skewness (), kurtosis (),  and  are determined with the following expressions:









**2. KRITKY-MENKEL distribution**

To determine the raw moments of the *KRITKY-MENKEL* distribution, the following substitutions in the expression for the probability density function are required:



It is noted:

  

The cumulative function is obtained as:



Checking the condition that the integral is 1:



Thus, the first six raw moments are:













The characteristic moment of order *r* of the KRITKY-MENKEL distribution has the following expression:



For r=1 result the arithmetic mean (expected value).

For the calculation of central moments, the same equivalence relations between central and raw moments are applied, following Pearson III.