Usability of the CAS's random variables during the learning process

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Theory and applications of random variables are quite complex area of the mathematical studies. At the beginning phase of this learning process is essential to emphasize the importance of the abstractions. Namely, we have to demonstrate how can reach from the experimenting problems towards to the mathematical objects. This is the so called modelling phase. After this we have to choose from the well-known discrete and continuous models. There are so many particular models which are requiring specific understanding. The "Statistics" package of the Maple Computer Algebra System (CAS) is provided by the capability of the random variables. This facility is unique among the CAS programs. The complexity of the manipulations with random variables is similarly hard task as the manipulations with algebraic expressions. Calculating the probability density function of the sum $Z=X+Y$ with two normal distribution terms $X \sim N(m1,s1)$, $Y \sim N(m2,s2)$ are requiring specific symbolic knowledge. There is a new symbolic object in the CAS which is calling "RandomVariable" and this object is relatively closed under the manipulations. If we tried to answer to the question what is the probability density function of the sum $Z=X+Y$ without CAS then we have to apply the mathematical theory obtaining the solution $Z \sim N(m1+m2,sqrt(m1^2+m2^2))$. However, if we use Maple "Statistics" package then we can get this answer from the procedure PDF without knowing about the underlying abstract theory.

What is the appropriate ratio between the rigorous mathematical verifications and the computer demonstrations? Anyone can add more examples pro and contra who is teaching with computer programs. The answers are varying from course to course and from topic to topic. In this lecture we examine the usability of the random variables of the Maple "Statistics" package throughout examples.