1. LESSON: PROPOSED EXERCISES

To solve the following proposed exercises, the theory corresponding to lesson 1 as well as the examples shown in the solved exercises of the same lesson will be very helpful.

1. A washing machine is mainly damaged by 3 types of defects: defects A, B or D. For reparation, defect A requires one piece, defect B requires 2 pieces and defect D requires 3 pieces. Defect A occurs in 60%, defect B in 30% and defect D in 10%. The cost of repair in euros (Z) depends on the necessary pieces (X), being Z=30X+20. Calculate average repair cost of the washing machine.

Solution: 65 euro

2. The random variable can take the following discrete values: {0.80; 0.81; 0.82}. Knowing that P(0.80)=2/10; P(0.81)=1/2 and P(0.82)=3/10, calculate first raw moment and second central moment.

Solution: 0.811; 0.000049

3. The second central moments of two distributions are 9 and 16. The third central moments of the two distributions are -8.1 and -12.8 respectively. What is the most asymmetric negative distribution?

Solution: First distribution

4. The expected value of a random variable is 22 and the second central moment is 4. Calculate the minimum probability that the variable is within the range (18, 26).

Solution: 0.75

5. The random variable represents the losses a company has. With an average loss of 12, what is the minimum probability that the loss will occur between 6 and 18, knowing that the variance is 4.

Solution: 8/9