

Exercise 1

Calc. : ✗

5 marks	<p>Une variable aléatoire continue X a une fonction de densité f donnée par :</p> $f(x) = \begin{cases} 0 & \text{si } x < 0 \\ a \cdot e^{-ax} & \text{si } x \geq 0 \end{cases}$ <p>On sait que : $P(X < 1) = \frac{1}{2}$.</p> <p>Montrer que $a = \ln 2$.</p>
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Exercise 2

Calc. : ✗

	<p>An electronic device makes it possible to obtain randomly in whole natural x included, in the broad sense, between 1 and 999 (we are therefore in a situation of equiprobability). Any number between 10 and 99 is written with two digits and any number between 1 and 9 is written with a single digit ; thus the number sixty-two will be displayed 62 and not 062, likewise the number seven will be written 7 and not 007.</p>
3 marks	1. Show that the probability of getting a multiple of 5 is $\frac{199}{999}$.
3 marks	2. Calculate the probability that the same number appears at least twice times in writing x .
	3. In this question we will round the probability of obtaining a multiple from 5 to 0.2. 5 numbers are successively determined using this device.
3 marks	Calculate the probability that, among these five numbers, three exactly be multiples of five.
	4. We model the choice of a real number x in the interval $[1; 999]$ by a random variable following the density law defined by the function $f(x) = \frac{1}{998}$.
1 mark	(a) What is the probability of rolling a multiple of 5?
3 marks	(b) What is the probability of getting a real less than or equal to 500?