

Subject 15

Please, don't write on the exam paper

This exercise is a MCQ : for each question you have to choose the right answer(s) (there can be one or several right answers) and justify your choice.

Question 1 : Which of these equations have no solution in \mathbb{R} ?

- a) $e^{2x} + 2 = 0$ b) $e^{2x} - 5 = 0$ c) $e^{2x} + e^x = 0$ d) $e^{2x} - 2e^x + 1 = 0$

Question 2 : For which value of m the equation $\frac{e^x}{e^x + 1} = m$ has no solution in \mathbb{R} ?

- a) $m = 0$ b) $m = 2$ c) $m = 0.5$ d) $m = -1$

Question 3 : Let $z = e^{\ln x} - \ln(e^x)$. Which of the following are true ?

- a) For every real number x , $z = 0$
- b) if $x = e$, then $z = 0$
- c) if $x > 0$, then $z = 0$
- d) if $x < 0$, then $z = 2x$

Question 4 : The sum of all positive multiples of 3 which are less than 100 equals :

- a) 336 b) 1584 c) 1683 d) 1785

Question 5 : A fair die is tossed 6 times. What is the probability of obtaining the number 6 at least once?

- a) 1 b) $1 - \frac{5^6}{6^6}$ c) $1 - \frac{1}{6^6}$ d) $\frac{1}{6^6}$