◎指示があるまで開かないこと

令和８年度　久留米大学大学院医学研究科

修士課程　前期入学試験問題兼解答用紙

英　　語

(総合生命科学・バイオ統計学専攻 バイオ統計学群)

試 験 日：令和７年８月１９日（火）

試験時間：１０：３０～１２：００

※問題兼解答用紙に直接解答を記入してください。

令 和 8 年 度

久留米大学大学院医学研究科修士課程 前期入学試験問題兼解答用紙

総合生命科学･バイオ統計学専攻 バイオ統計学群(英語)

受験番号	

【 全 2 － 1 】

（採点 ）

1. Suppose that the maximum value of function $f(x) = -2x^2 + 8x + k$ $(1 \leq x \leq 5)$ is 4.
   (a) Find the value of the constant k.
   (b) Find the minimum value of the function $f(x)$.
   (c) Calculate the area bounded by the parabola $y = f(x)$ and the line $y = 2$.

2. Two players A and B, will play a tennis match. The one who wins 3 sets first will be the winner of the match. Assuming that the probability of A winning a set over B is 2/3, find the probability for each of the following events.
   (a) A wins the match in the 3rd set.
   (b) A wins the match in the 4th set.
   (c) A wins.

令 和 8 年 度

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総合生命科学･バイオ統計学専攻 バイオ統計学群(英語)

受験番号	

【 全 2 － 2 】

（採点 ）

3. In a math class, the exam results show an average score of 42 points and a variance of 18.
   (a) If 30 points are added to each student's score, what will be the new average score and variance for the class?
   (b) If each student's score is doubled, what will be the new average score and variance for the class?
   (c) If we subtract the class average (42) from each student's score and then ~~divide~~ the result is divided by the square root of the variance ($\sqrt{18}$), what will be the new average score and variance?

   [Note] Assuming the students' scores are $x_1, \ldots, x_n$, then the variance is defined as $\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2$ where $\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$ is the average score.

4. Solve the following problems.
   (a) Find the value.

$$\sqrt[3]{3} \times \sqrt[3]{243}$$

   (b) Find the value.

$$(\log_3 125 + \log_9 5)(\log_{25} 3 + \log_5 9)$$

   (c) Solve the following equation.

$$2 + \log_5 x = (\log_5 x)^2$$