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|  |  S5 B Test, June 2023Teachers : M. A. COSTA MOLINA, A. FIELDING, A. HARSANYI, A. C. LENTI, O. PICAUD, S. ANGELOZI, S. F. SOLANDER, J. SZUTY, L. WURZER. |

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|  | **MatHEMATICS 4 périodS****Part A** |  |

**Date :** 14 June 2023

Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Score : \_\_\_\_\_ / 20

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| **Duration of Test :**45 minutes : 8h30 - 9h15**AUTHORIZED MatériAl :**NON-CaLCULATORPencilRuler**Special REmarks :** |  |

* The subject includes 4 compulsory exercises.
* The answers must be accompanied by the explanations necessary for their elaboration.
* Full points cannot be awarded for a correct answer in the absence of the reasoning and explanations that lead to this answer.

Stay calm and focused.

Good job and good luck.

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| **Exercice A1** | **Marks** |
| Let $f(x)$ be the function defined by $f\left(x\right)=2^{x}$. |  |
| 1) **Complete** the table of values below :

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $$x$$ | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| $$f\left(x\right)$$ |  |  |  |  |  |  |  |

 | 2 points |
| 2) **Sketch** a graph of the function $f(x)$ below : | 2 points |
|  |  |
| 3) **Discuss** if the function $f(x)$ is representing exponential growth or decay. **Justify**. | 1 point |

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| **Exercice A2** | **Marks** |
| 1) **Match** each angle in degrees (from a to e) to the corresponding angle in radians (from i to v) :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a) 90° | b) 30° | c) 300° | d) 270° | e) 135° |
| i) $\frac{5}{3}π$ | ii) $\frac{1}{2}π$ | iii) $\frac{3}{4}π$ | iv) $\frac{1}{6}π$ | v) $\frac{3}{2}π$ |

 | 2,5 points |
| 2) **Place** these five angles on the Unit Circle below. |  |
|  | 2,5 points |

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| **Exercice A3** | **Marks** |
| We have put together the December B tests in mathematics, for S5 pupils of EEB1. Among those tests, we look at the grades of 6 students. Their 6 marks were as follows: |  |
| 5 ; 5 ; 6 ; 6 ; 6 ; 8 |  |
| 1) **Calculate** the mean of these 6 marks. | 1 point |
| 2) **Check** that the standard deviation of these 6 marks is 1. | 2 points |
| 3) In another group of students, the mean is the same but the standard deviation is higher. **Interpret** this difference in terms of results of the two groups of students. | 1 point |
| 4) **Give** an example of a series of 6 marks with the same mean, but with a higher standard deviation. | 1 point |

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| **Exercice A4** | **Marks** |
| 1) **Associate** each function (from f to h) to the graph (from i to iii) :

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| --- | --- | --- |
| $$f\left(x\right)=sin\left(x\right)$$ | $$g\left(x\right)=cos\left(x\right)$$ | $$h\left(x\right)=tan\left(x\right)$$ |

 | 3 points |
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| i) |  |
| ii) |  |
| iii) |  |

 |  |
| 2) **Give** the périod of the functions i) and ii). | 2 points |

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**END OF THE EXAMINATION**