|  |  |
| --- | --- |
|  | **S5 B test, June 2024****Professors:** F.AVIGNON, O.PICAUD, S.AMRI, B.DUROYON-MARCHAND, I. STEPIEN-MOSKALIK, J. SZUTY, C. FOLMER JENSEN, L. EGHOLM, L. BUSINARO ,D. CSONKA, J. LEEB, L. SÁNCHEZ BLÁZQUEZ, C. SEARLE.. |

|  |  |  |
| --- | --- | --- |
|  | **Mathematics 6 periods****Part A** |  |

**Date: June 17th, 2024**

Last name, First name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class: S5MA6ENB

Marks : \_\_\_\_\_ / 27

|  |  |
| --- | --- |
| **Duration of the test:**45 minutes: 13:00 – 13:45 **Authorized Equipment:**Exam without technological supportPencil for Drawings/ graphicsRuler**Notes:** |  |

* The examination consists of 4 questions in total.
* The answers to each question must be supported by detailed working.
* Answers given without supporting evidence may not be awarded marks.
* Answer all questions in the spaces provided in this booklet.

Stay calm and focussed.

Believe in yourself!

|  |  |
| --- | --- |
| **Exercise A1** | **Scale** |
| Consider the functions $f\left(x\right)=x^{2}-8x+15$ and $g\left(x\right)=\left(x-4\right).\left(x+4\right)$. | 12 marks |
| 1. **Find** the equation of the axis of symmetry for the function $f$.
 | 3 |
| 1. **Solve** the following equation showing all stages of your working: $f\left(x\right)=0$
 | 3 |
| 1. **Determine** if the function $g$ intersects with the x-axis. If yes, **find** the points of intersection.
 | 3 |
| 1. **Solve** the following equation showing all stages of your working:

 $f\left(x\right)=g(x)$ | 3 |

|  |
| --- |
|  |

|  |  |
| --- | --- |
| **Exercise A2** | **Scale** |
| **Solve** the following equation: $log\_{2}\left(x\right)+log\_{2}\left(4\right)=6$ | 5 marks5 |

|  |
| --- |
|  |

|  |  |
| --- | --- |
| **Exercise A3**  | **Scale** |
| **Solve** the equation: $\cos((x+\frac{π}{4}))=\frac{-1}{ 2}$ , for the interval $x\in [0,2π)$ |  4 marks4 |

|  |
| --- |
|  |

|  |  |
| --- | --- |
| **Exercise A4** | **Scale** |
| 12 out of 28 students on a course are boys. 1/3 of the boys run a YouTube channel. 50% of all students are neither male nor YouTubers. | 6 marks |
| 1. **Set up** a fully completed four-field table for the situation described above.
 | 4 |
| 1. A pupil is selected at random. Given that the pupil runs a YouTube channel, **calculate** the probability that this student is a girl.
 | 2 |

|  |
| --- |
|  |

**END OF EXAMINATION**