

**Exercise 1**

Calc. : ✖

Consider the functions  $f(x) = x^2 - 8x + 15$  and  $g(x) = (x - 4) \cdot (x + 4)$ .

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| 1. <b>Find</b> the equation of the axis of symmetry for the function $f$ .   | 3 marks |
| 2. <b>Solve</b> the following equation showing all stages of your working: $f(x) = 0$ .                                | 3 marks |
| 3. <b>Determine</b> if the function $g$ intersects with the $x$ -axis. If yes, <b>find</b> the points of intersection. | 3 marks |
| 4. <b>Solve</b> the following equation showing all stages of your working: $f(x) = g(x)$ .                             | 3 marks |

**Exercise 2**

Calc. : ✖

**Solve** the following equation:  $\log_2(x) + \log_2(4) = 6$ .

5 marks

**Exercise 3**

Calc. : ✖

**Solve** the equation:  $\cos\left(x + \frac{\pi}{4}\right) = \frac{-1}{2}$ , for the interval  $x \in [0; 2\pi)$ .

4 marks

**Exercise 4**

Calc. : ✖

12 out of 28 students on a course are boys.  $\frac{1}{3}$  of the boys run a YouTube channel. 50% of all students are neither male nor YouTubers.

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| 1. <b>Set up</b> a fully completed four-field table for the situation described above.   | 4 marks |
| 2. A pupil is selected at random. Given that the pupil runs a YouTube channel, <b>calculate</b> the probability that this student is a girl. | 2 marks |