**SACRED HEART GIRLS’ COLLEGE**

**OAKLEIGH**



**Mathematical Methods CAS 2014**

**Unit 3 SAC 1: TEST**

**Part A**

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

 **Teacher (please circle)**: Ms Gates Mr Smith Ms Garkel

**No CAS and no summary notes permitted**

**Part A: 5 short answer questions**

**Writing Time: 20 minutes**

**Marks: 14**

**SHORT ANSWER QUESTIONS**

**Instructions:**

Answer **all** questions in the spaces provided.

In all questions where a numerical answer is required an exact value must be given unless otherwise specified.

In questions where more than one mark is available, appropriate working **must** be shown.

Unless otherwise indicated, the diagrams in this test are **not** drawn to scale.

**Question 1** (2 marks)

Solve the equation $4^{x-1}×2^{x}=16$

**Question 2** (2 marks)

Solve the equation $log\_{6}\left(x\right)+log\_{6}\left(x-1\right)=1$

**Question 3** (2 marks)

Solve the equation $2\sin(\left(2x\right)=-\sqrt{3}) $for $x\in \left[0,π\right]$

**Question 4** (3 marks)

Let $f:R\rightarrow R,f\left(x\right)=e^{x}+1$

1. Find the rule and domain of the inverse function $f^{-1}$ 2 marks
2. If $f^{-1}\left(m\right)=0 $, find the value of $m$ 1 mark

**Question 5** (5 marks)

1. Find $f\left(0\right)$ for the function $f\left(x\right)=2^{2x}-2^{x+2}-5$ 1 mark
2. Show that the $x$ intercept for $f\left(x\right)=2^{2x}-2^{x+2}-5$ is equal to $log\_{2}5$ 3 marks
3. State the values of $x$ for which $2^{2x}-2^{x+2}>5$ 1 mark

**END OF QUESTION AND ANSWER BOOKLET**