INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 12 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining your answers.
4. Answers only will not necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers to TWO decimal places, unless stated otherwise.
7. ONE diagram sheet is attached to answer QUESTION 12.1. Write your centre number and examination number on the sheet in the spaces provided and insert it inside the back cover of your ANSWER BOOK.
8. Diagrams are NOT necessarily drawn to scale.
9. An information sheet with formulae is included at the end of the question paper.
10. Number the answers correctly according to the numbering system used in this question paper.
11. Write neatly and legibly.

QUESTION 1

1.1 Solve for x:

1.1.1 $(x^2-9)(2x+1)=0$ (3)

1.1.2 $x^2+x-13=0$ (Leave your answer correct to TWO decimal places.) (4)

1.1.3 $2.3^x=81-3^x$ (4)

1.1.4 $(x+1)(4-x)>0$ (3)

1.2 Given: $2^x+2^{x+2}=-5y+20$

1.2.1 Express 2^x in terms of y. (2)

1.2.2 How many solutions for x will the equation have if $y=-4$? (2)

1.2.3 Solve for x if y is the largest possible integer value for which $2^x+2^{x+2}=-5y+20$ will have solutions. (3)

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QUESTION 2

2.1 Given the geometric series: $256+p+64+32+\ldots$

2.1.1 Determine the value of p. (3)

2.1.2 Calculate the sum of the first 8 terms of the series. (3)

2.1.3 Why does the sum to infinity for this series exist? (1)

2.1.4 Calculate S_∞ (3)