

SA EXAM PAPERS This Paper was downloaded from SAEXAMPAPERS  
**SA's Leading Past Year**

**Exam Paper Portal**



*You have Downloaded, yet Another Great Resource to assist you with your Studies 😊*

*Thank You for Supporting SA Exam Papers*

Your Leading Past Year Exam Paper Resource Portal

Visit us @ [www.saexampapers.co.za](http://www.saexampapers.co.za)



**SA EXAM  
PAPERS**

SA EXAM PAPERS  
Proudly South African



This Paper was downloaded from SAEXAMPAPERS



**MATH-SAGE ACADEMY**

**NATIONAL SENIOR CERTIFICATE**

**MATHEMATICS**

**GRADE 12**

**SEQUENCE AND SERIES  
FUNCTIONS**

**2026  
TEST 3**

**MARKS: 40**

**DURATION: 1 HOUR**



**SA EXAM PAPERS**

Proudly South African



## **INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions.

1. This paper consists of **FOUR** question.
2. Answer **ALL** the questions.
3. Clearly show **ALL** calculations, diagrams, graphs, etc. 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 answers off to **TWO** decimal places, unless stated otherwise.
7. Diagrams are **NOT** necessarily drawn to scale.
8. Write neatly and legibly.



**QUESTION 1**

1.1 Consider the combination of arithmetic and geometric sequence:

$$\frac{1}{2}, 4, \frac{1}{4}, 7, \frac{1}{8}, 10, \dots$$

1.1.1 Determine the NEXT two terms of the sequence. (2)

1.1.2 Calculate the sum of the first 50 terms of the sequence. (6)

1.2 Consider the sequence: 8; 18; 30; 44; ...

1.2.1 Write down NEXT two terms of the sequence, if the sequence continues in the same way (2)

1.2.2 Determine the general term of the sequence. (4)

1.2.3 If the sequence of the first difference contains 100 terms, express the sum of the sequence using sigma notation. (3)

1.3 Evaluate:

$$\sum_{n=4}^{200} (2n + 4) + \sum_{k=1}^{\infty} 4 \left(\frac{1}{3}\right)^{k+1} \quad (5)$$

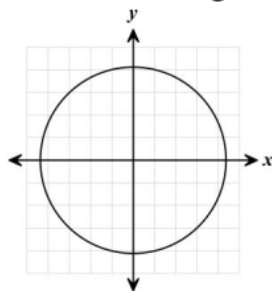
**[22]**

**QUESTION 2**

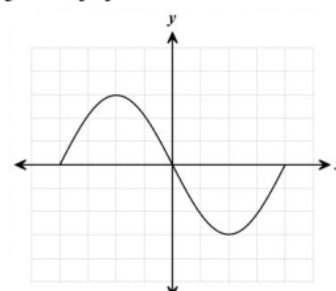
2.1 Define a function. (2)

2.2 State whether the following is a function or not justify your answer:

A.



B.



(4)

**[06]**



**QUESTION 3**

3.1 Given  $f(x) = 3x - 5$  for  $x \in [-4, 5]$

3.1.1 Determine the equation for  $f^{-1}$  (2)

3.1.2 Calculate the value of  $f(5)$  (1)

3.1.3 Sketch the graphs of  $f$  and  $f^{-1}$  on the same set of axes and show the line of symmetry and the coordinates of endpoints. (4)

3.1.4 Calculate the coordinates of point of intersection of  $f$  and  $f^{-1}$  (4)

**[11]****QUESTION 4**

4.1 Given  $h(x) = -2x^2$

4.1.1 Determine the equation for  $h^{-1}$  (2)

4.1.2 Sketch the graphs of  $h$  and  $h^{-1}$  on the same set of axes and show the line of symmetry and the coordinates of endpoints. (3)

4.1.3 Is the inverse of  $h$  a function? If no justify your answer (2)

4.1.4 How domain of  $h$  can be restricted so that the inverse will be a function? (2)

4.1.5 If  $x \leq 0$  for the graph of  $h$ . Determine the domain and range for the inverse of  $h$ . (2)

**[13]**