



NORTHERN CAPE
DEPARTMENT OF EDUCATION

NOORD KAAP

DEPARTEMENT VAN ONDERWYS

LEFAPHA LA THUTO

PROVINCIAL
COMMON TEST

GRADE 12

MATHEMATICS
CONTROL TEST

MARCH 2026

MARK ALLOCATION: 100

TIME ALLOCATION: 2 HOURS

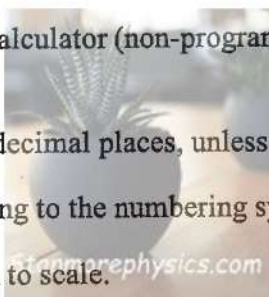
This exam paper consists of 10 pages, which include 1 information sheet and 1 diagram sheet



INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the question paper.

1. This question paper consists of 6 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs, etc. that you use in answering the questions.
4. Answers alone will NOT necessarily earn full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round answers to TWO decimal places, unless stated otherwise.
7. Number the answers correctly according to the numbering system used on the question paper.
8. Diagrams are NOT necessarily drawn to scale.
9. An information sheet is included at the end of the question paper.
10. Write neatly and legibly.



QUESTION 1

Solve for x :

1.1.1 $3x^2 - 5x - 2 = 0$ (2)

1.1.2 $\sqrt{5-x} - 1 = x$ (5)

1.1.3 $x^2 - 1 = x + x$ (3)

(Round off to 2 decimal places)

1.1.4 $a(x-b) = c$ (2)

1.2 A company's monthly profit is expressed as an inequality: (2)

$$-5x + 120 \leq 0$$

How many items does the company need to sell at least to be profitable?

1.3 Solve for x and y simultaneously: (4)

$$2x - 4y = 3$$

$$\log_2 8 = x$$

1.4 Show that: (3)

$$5^{2025} - 5^{2023} = 24.5^{2023}$$

[21]



QUESTION 2

2.1 The first four terms of a quadratic sequence are as follows:

2;10;14;14

2.1.1 Give the value of the next term in the sequence. (1)

2.1.2 Determine the n -th term of the sequence (4)

2.2 Given the following number pattern which is a combination of a linear and a geometric number pattern:

$3; \frac{1}{2}; 3; \frac{4}{10}; 3; \frac{16}{50}; \dots$

2.2.1 Write down the values of the next TWO terms of the pattern. (1)

2.2.1 Calculate the sum of the first thirty-five terms of the pattern. (5)

2.3 Calculate : $\sum_{n=3}^{\infty} 5 \cdot 3^{1-n}$ (4)

2.4 The series consisting of natural numbers from 25 to 999 is given as follows:

25;26;27;28;29;.....;999

2.4.1 Write down the first three even numbers in the given sequence. (1)

2.4.2 Calculate the sum of all the even numbers in the given sequence. (4)

2.5 The m -th term of an arithmetic sequence is k and the k -th term of the same sequence is m . Determine the value of the common difference (d) if $m \neq k$. (4)

[24]

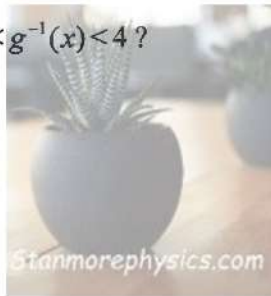


QUESTION 3

Given: $g(x) = \log_{\frac{1}{4}} x$

- 3.1 Write down the domain of g . (2)
- 3.2 Calculate the x -intercept of g . (2)
- 3.3 Draw the graph of g^{-1} , indicate the intercept(s) with the axes as well as the asymptote. (2)
- 3.4 $P(a; -1)$ is a point on g , calculate the value of a . (2)
- 3.5 For which values of x will, $1 < g^{-1}(x) < 4$? (1)

$g^{-1} = (1/4)^x$

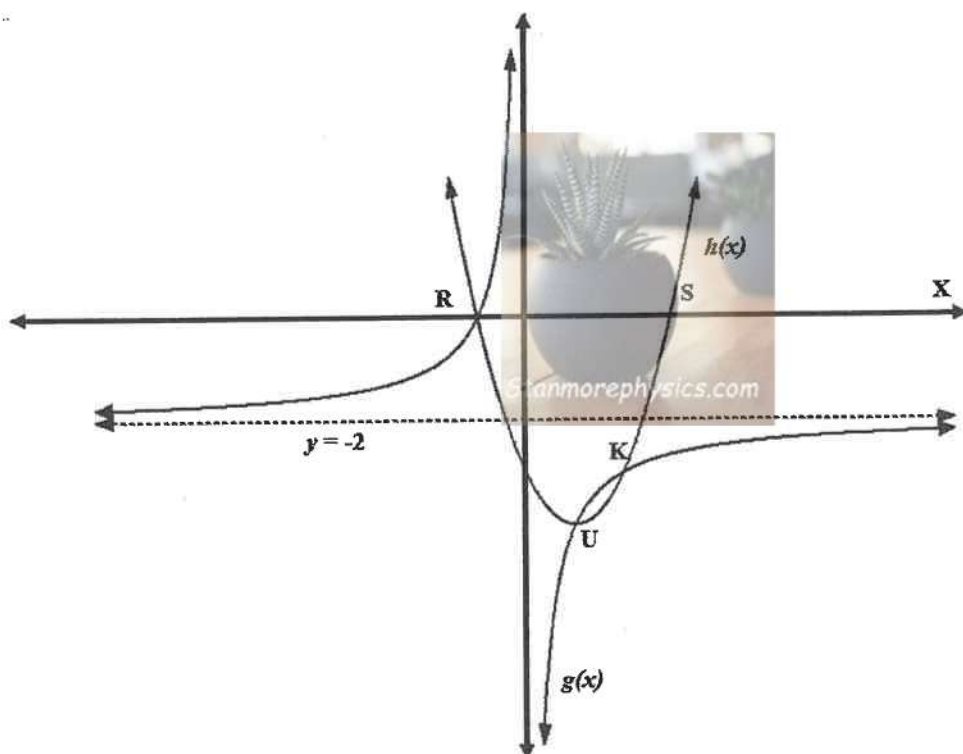


[9]



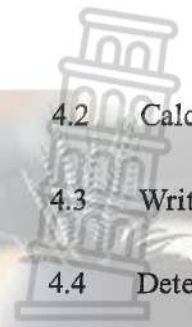
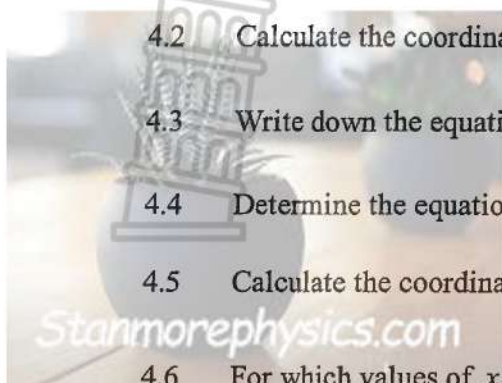
QUESTION 4

The graphs of $g(x) = \frac{a}{x} + q$ en $h(x) = x^2 - 2x - 3$ are sketched. The graph of h intersects the x -axis at R and S. The two graphs intersect at the points R, U, and K. U is the turning point of h . The line $y = -2$ is the asymptote of g .




4.1 Calculate the coordinates of R and S

(3)

- 
- 
- 4.2 Calculate the coordinates of U (3)
- 4.3 Write down the equation of the vertical asymptote of g (1)
- 4.4 Determine the equation of g (3)
- 4.5 Calculate the coordinates of K (5)
- 4.6 For which values of x , will $g(x) > h(x)$? (3)

[18]

QUESTION 5



5.1 If $\sin A = \frac{3}{5}$ and $\cos A < 0$, determine WITHOUT the use of a calculator the value of :

5.1.1 $\sin(-A)$ (1)

5.1.2 $\tan A$ (3)

5.2 If $\cos 34^\circ = w$, write the following, WITHOUT using a calculator, in terms of w :

5.2.1 $\cos 214^\circ$ (2)

5.2.2 $\cos 56^\circ$ (3)

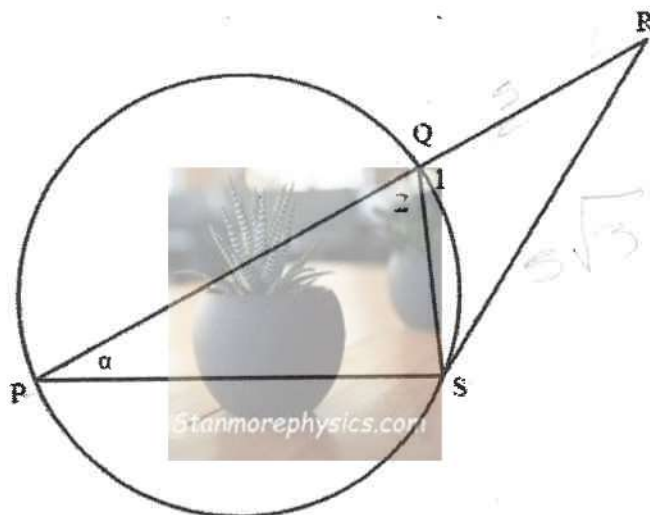
5.2.3 $\cos^2 34^\circ + \sin^2 34^\circ$ (2)

[11]



QUESTION 6

6.1 In the figure, the diameter PQ of the circle is extended to R. S is a point on the circumference of the circle such that $QR = QS = x$. P and S are connected and $\hat{QPS} = \alpha$.



6.1.1 Show that : $SR = x\sqrt{2(1 + \sin \alpha)}$ (4)

6.1.2 If $SR = 5\sqrt{3}$ en $x = 5$, show that $PQ = 10$ (3)

6.2 Show that: $\frac{1 - \cos^2 \theta}{\tan(360^\circ - \theta) \cdot \cos(-\theta) \cdot \sin(180^\circ + \theta)} = 1$ (6)

6.3 Determine the general solution: (4)

$$3 \tan x = \frac{3}{\cos x}$$

[17]

TOTAAL: 100