KWAZULU-NATAL PROVINCE

EDUCATION

REPUBLIC OF SOUTH AFRICA

PROVINCIAL STANDARDISED ASSESSMENT

GRADE 11

MATHEMATICS P1

JUNE 2026

Stanmorephysics.com

MARKS: 100

TIME: 2 hours

This question paper consists of 7 pages and an answer book of 12 pages.

Copyright Reserved

INSTRUCTIONS AND INFORMATION

Read the following instructions and information carefully before answering the questions.

1. This question paper consists of 5 questions.

2. Answer ALL the questions in the SPECIAL ANSWER BOOK provided.

3. Clearly show ALL calculations, diagrams, graphs, etc. that you have used in determining your answers. Stanmorephysics.com

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. Diagrams are NOT necessarily drawn to scale.

8. Write neatly and legibly.



Copyright Reserved

QUESTION 1

1.1 Solve for x:

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

1.1.2 $x^2-100=0$ (3)

1.1.3 $3x-5=\frac{3}{x}$ (answer correct to TWO decimal places) (4)

1.1.4 $(x-3)(x+4)\geq 8$ (4)

1.1.5 $x+\sqrt{x-2}=4$ (5)

1.2 A mother has a son and a daughter.
The son is exactly two years older than the daughter.
In a certain year, the sum of the ages of the two children will be equal to 75% of the product of their ages.



How old was each child in that year? (5)

1.3 Given $xy=2x+10$, where x and y are both natural numbers.
Calculate the maximum value of xy when x and y satisfy the equation simultaneously. (4)

[27]

Copyright Reserved

QUESTION 2

2.1 Simplify the following expressions fully, WITHOUT using a calculator:

2.1.1 $\sqrt{\sqrt{81}x^6}$ (2)

2.1.2 $\dfrac{25^{k+1}.10^k}{8^k.125^k.2^{-2k}}$ (4)

2.1.3 $\sqrt{\dfrac{3^{2026}+3^{2024}}{2^{-2}.3^{2022}}}$ (3)

Stanmorephysics.com

2.2 Solve for x, WITHOUT using a calculator:

2.2.1 $3x^{-\frac{5}{3}}-96=0$ (3)

2.2.2 $27^x=243.\sqrt[x]{9}$ (5)

2.3 It is given that $\sqrt[4]{2}=a$ and $\sqrt[3]{3}=b$.
Determine $\sqrt{32}-\sqrt{18}+\sqrt[3]{6}.\sqrt[3]{4}$ in terms of a and or b. (5)
[22]

Stanmorephysics.com

QUESTION 3

Consider a function defined as $f(x)=\dfrac{4}{x-4}-2$.

3.1 Write down the equations of the asymptotes of f. (2)

3.2 Calculate the y-intercept of f. (2)

3.3 Calculate the x-intercept of f. (3)

3.4 Draw a neat sketch of f. Clearly show all intercepts with the axes and the asymptotes. Stanmorephysics.com (3)

3.5 Write down the values of x for which $f(x)\geq 0$. (2)

3.6 Determine the equation of the axis of symmetry having a positive gradient (2)

3.7 Determine the point of intersection between f and the axis of symmetry having a positive gradient if $0<x<4$. (5)
[19]

Stanmorephysics.com

QUESTION 4

The equation of a straight line is $g(x)=4x+3$. The properties of $h(x)=b^x+q$ are:

- $h(0)=3$
- $b>1$
- $y\in \mathrm{R}; y>2$.

4.1 Write down the value of q, the asymptote of h. (1)

4.2 Draw a neat sketch of g and h on the same set of axes. Clearly show all intercepts with the axes and the asymptote of h. (5)

4.3 It is given that $(2;11)$ lies on h. Calculate the value of b. (3)

4.4 It is also given that $k(x)=h(x-1)-11$.

4.4.1 Write down the x-intercept of k. (1)

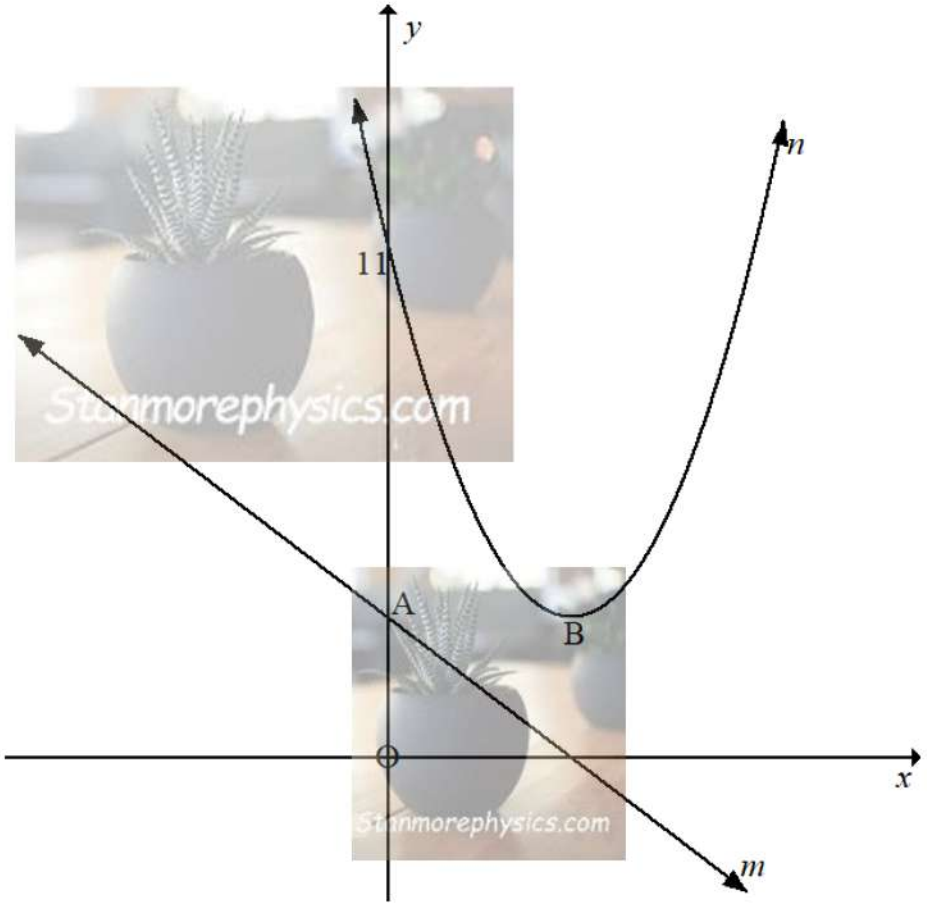
4.4.2 Write down the equation of k in the form $k(x)=b^t+r$. (2)

[12]



QUESTION 5

5.1 The graphs of $m(x) = -\frac{3}{2}x + 3$ and $n(x) = 2x^2 - 8x + 11$ are drawn below.
A is the y-intercept of m and B is the turning point of n.



5.1.1 Write down the coordinates of A. (1)

5.1.2 Determine the range of n. (3)

5.1.3 It is given that $t(x) = 3^{1-n(x)}$. Determine the largest value of t. (2)

5.1.4 It is given that $2x^2 - 8x = 2k - 11$. Determine the values of k where the roots of n will have the same signs. Stanmorephysics.com (3)

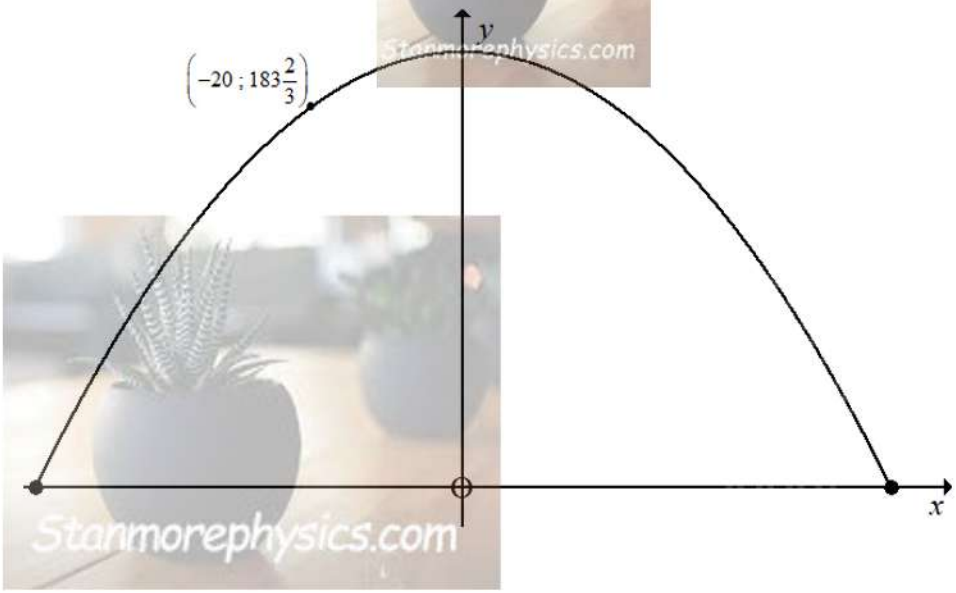
5.1.5 Determine the values of d for which the graph of $p(x) = dx + 9$ will be a tangent to n. (5)

Copyright Reserved

5.2 The gateway arch in Saint Louis is in the shape of a parabola. The maximum height of the arch is 192 *m*. The gateway arch in Saint Louis is shown below.



The diagram below shows the arch placed in a Cartesian plane. The turning point of the arch lies on the y-axis. $\left(-20\ ;\ 183\frac{2}{3}\right)$ is a point on the arch.



Prove that the width of the arch is the same as the maximum height.
Show all necessary calculations. (6)
[20]

TOTAL MARKS : 100

Copyright reserved