KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10



MATHEMATICS P1

COMMON TEST

JUNE 2023

MARKS: 50

TIME: 1 hour

This question paper consists of 4 pages.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 3 questions.
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.
5. Answers only will NOT necessarily be awarded full marks.
6. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
7. If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
8. Diagrams are NOT necessarily drawn to scale
9. Write neatly and legibly.

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QUESTION 1

1.1 Simplify:

1.1.1 $(2x-3)(3x^2-4x+1)$ (2)

1.1.2 $\dfrac{4^{x+1}.3^{x-1}}{12^{x-2}}$ (4)

1.2 Factorise fully:

1.2.1 $3x^2-2x-5$ (2)

1.2.2 $-xy-(y-x)b+b^2$ (3)

[11]

QUESTION 2

2.1 Solve for:

2.1.1 $x(x-8)=-12$ (3)

2.1.2 $\dfrac{x-3}{1-x^2}-\dfrac{2x+4}{x+1}=\dfrac{-2x}{x-1}$ (5)

2.1.3 $3^x-3^{x-2}=24$ (3)

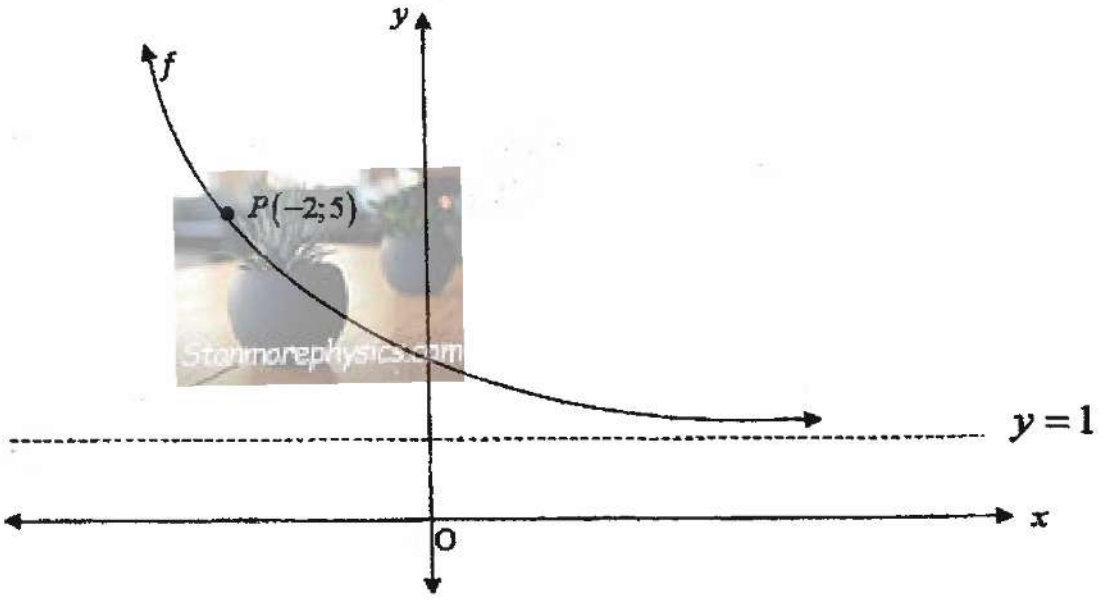
2.1.4 $-1<\dfrac{x}{2}+3\leq 4$ (2)

2.2 The sum of the squares of two consecutive natural numbers is 85.
Determine the numbers. (4)

[17]

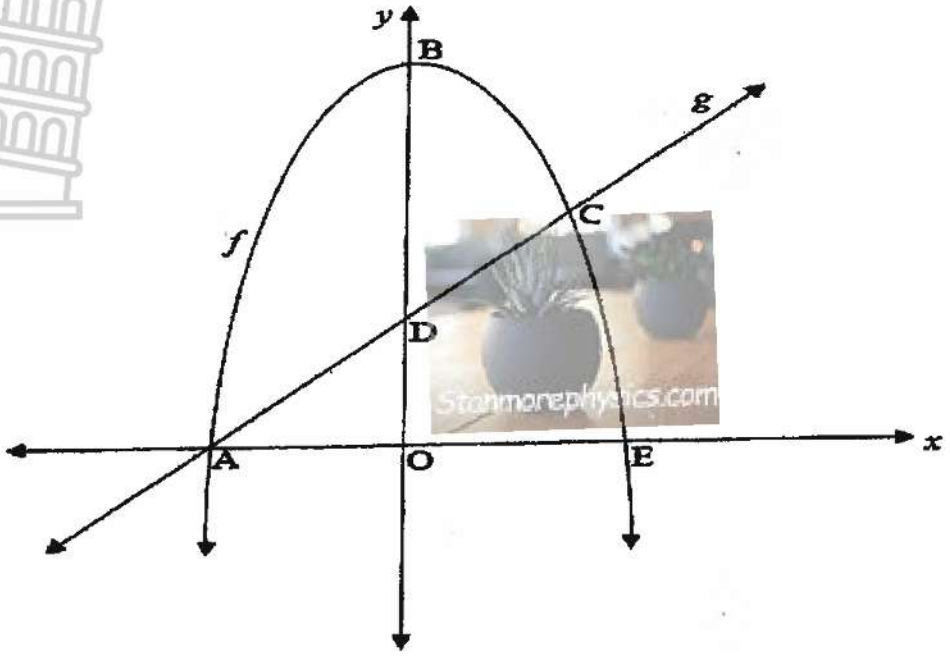
QUESTION 3

3.1 The sketch below shows a graph of $f(x)=b^x+q$. $P(-2,5)$ is a point on the graph.



3.1.1 Calculate the values of b and q. (4)

3.2 Sketched below are graphs of $f(x)=-x^2+9$ and $g(x)=mx+3$ .The graphs intersect at points A and C .Points A and E are the x intercepts of f and B and D are the y intercepts of f and g.



3.2.1 Determine the coordinates of points B and D. (2)

3.2.2 Write down the domain and range of f. (2)

3.2.3 Determine the length of AE. (4)

3.2.4 Calculate the value of m. (2)

3.2.5 Determine the coordinates of A and C, the points of intersection of f and g. (4)

3.3 For which values of x is:

3.3.1 $f(x)>g(x)$ (2)

3.3.2 $\dfrac{f(x)}{g(x)}\leq 0$ (2)

[22]

TOTAL: [50]

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