GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

JUNE 2024

GRADE 10

MATHEMATICS

(PAPER 2)

TIME: **1 hour**

MARKS: **50**

6 pages

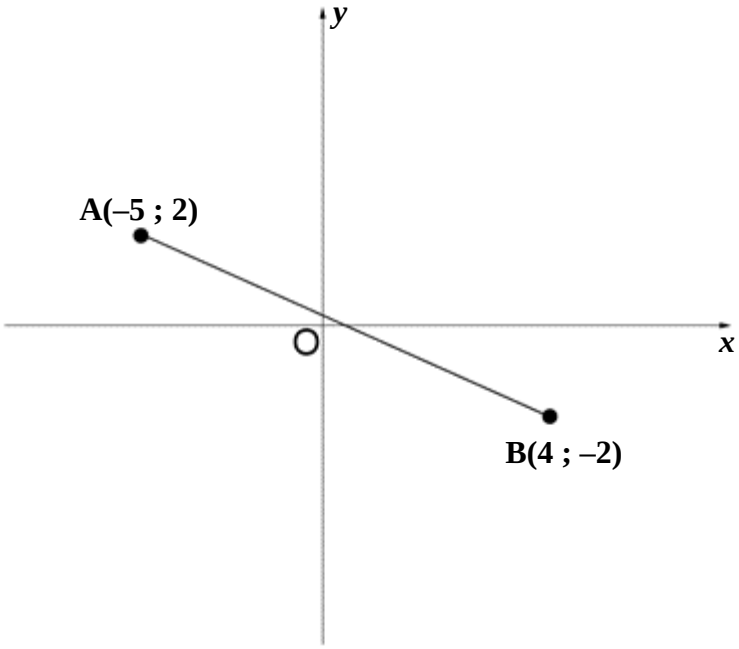
INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 5 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs etc. that you have used to determine the 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. Diagrams are NOT necessarily drawn to scale.
8. Write neatly and legibly.

QUESTION 1

In the figure below, $A(-5\,;\,2)$ and $B(4\,;-2)$ are points on a line segment AB.



1.1 Determine the length of AB. (3)

1.2 Determine the coordinates of the midpoint of AB. (3)

1.3 Determine the gradient of line AB. (3)

1.4 Point A undergoes a certain transformation to a point A' such that the gradient of the line A'B becomes undefined.

Describe the transformation that maps point A to A'. (2)

[11]

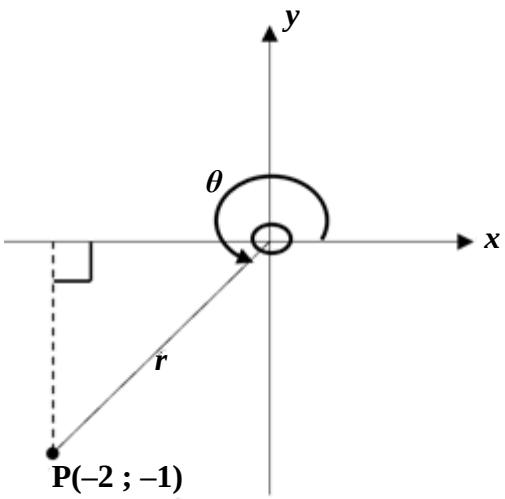
QUESTION 2

2.1 If $A = 78°$ and $B = 34°$, calculate the values of the following expressions, correct to two decimal places.

2.1.1 $sin\,A - sin\,B$ (2)

2.1.2 $\sqrt[3]{sec\,A}$ (2)

2.2 In the diagram below, point P$(-2; -1)$ lies in the third quadrant. OP $= r\ cm$. The axes intersect at O, which represents the origin on the sketch.



Using the sketch and **without using a calculator**, calculate the:

2.2.1 Length of OP. (2)

2.2.2 Value of $\sqrt{5}\ cos\ \theta + 4\ cosec^2\ \theta$ (4)

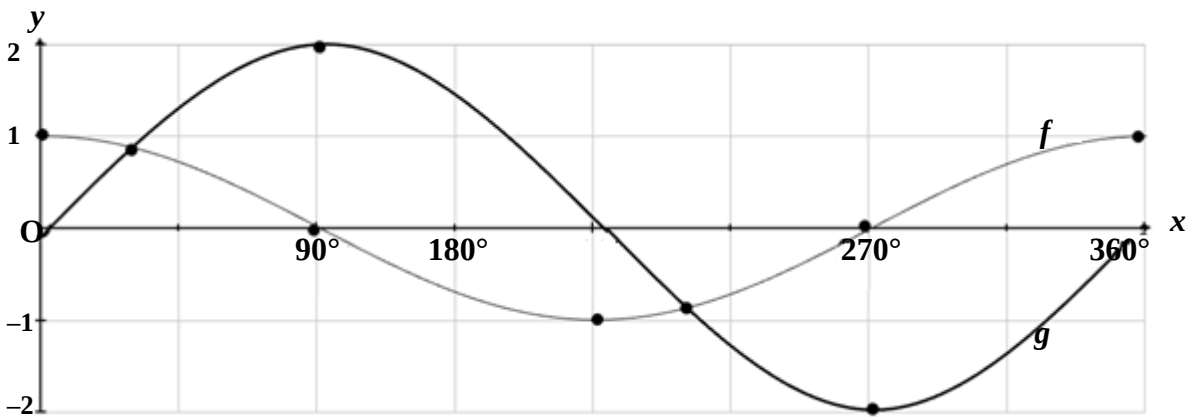
2.3 Evaluate **without using a calculator**:

$$\frac{\sin 45°}{\frac{\sqrt{2}}{2}\ .\tan^2 30°}$$

(3)
[13]

QUESTION 3

The sketch below shows the graph of $f(x) = cos\, x$ and $g(x) = 2\, sin\, x$ for the interval $x \in [0°; 360°]$.



3.1 Write down the period of g. (1)

3.2 For which value(s) of x will $f(x) \geq 0$? (2)

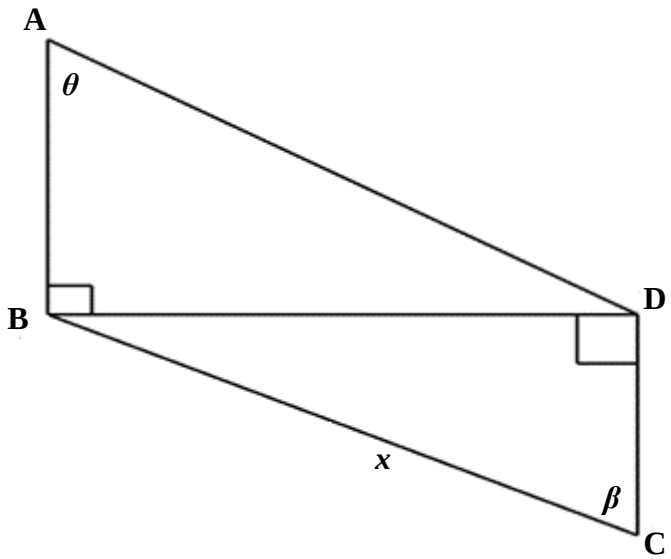
3.3 Determine the range of $m(x)$ if $m = -4\, f(x) + 1$. (3)

[6]

QUESTION 4

In the diagram below, $\hat{A} = \theta$ and $A\hat{B}D = 90°$. BC $= x\ m$, $\hat{C} = \beta$ and $B\hat{D}C = 90°$.

.



4.1 Show that AB $= \dfrac{x \sin \beta}{\tan \theta}$ (4)

4.2 Hence, or otherwise, calculate the length of AB, correct to two decimal places, if $\theta = 52°;\ \beta = 40°$ and $x = 12\ m$. Write your answer to the nearest whole number. (2)

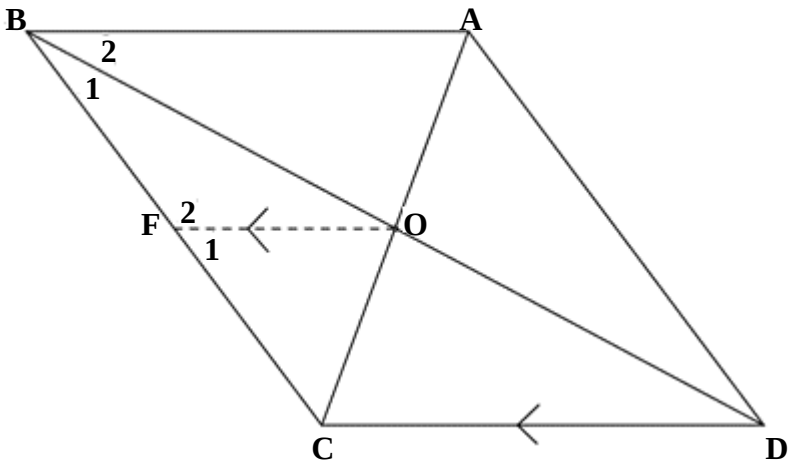
[6]

QUESTION 5

5.1 Complete the theorem:

The line segment joining the midpoints of two sides of a triangle is … and …
(Write down the missing words only.) (2)

5.2 ABCD is a rhombus with the diagonals AC = 16 cm and DB = 30 cm.



5.2.1 Calculate the length of BC. (4)

5.2.2 Calculate OF, if OF is parallel to DC with F on BC. (3)

5.2.3 Determine the size of $O\hat{B}F$ if $O\hat{F}C = 64°$. (3)

5.3 Determine the area of the rhombus ABCD (2)
[14]

TOTAL: 50

END