GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

JUNE 2022

GRADE 10

MATHEMATICS

(PAPER 2)

TIME: **1 hour**

MARKS: **50**

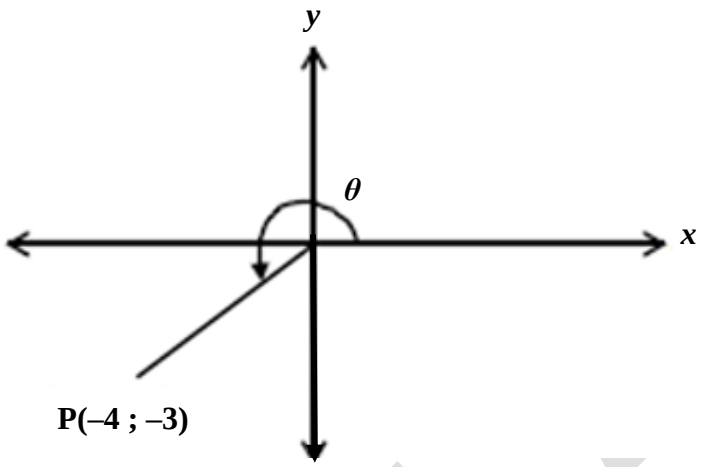
6 pages

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 8 questions.
2. Show ALL calculations, diagrams, graphs etc. that you have used to determine the answers, clearly.
3. Answers only will NOT necessarily be awarded full marks.
4. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
5. If necessary, round-off answers to TWO decimal places, unless stated otherwise.
6. Diagrams are NOT necessarily drawn to scale.
7. Write neatly and legibly.

QUESTION 1

Study the diagram below and answer the questions that follow, without the use of a calculator.



Determine the value of:

1.1 $\sin\theta$ (3)

1.2 $5\cos(90° - \theta) + 3\cot\theta$ (3)
[6]

QUESTION 2

Determine the acute angle β to 2 decimals:

2.1 $\sin(\beta - 17{,}8°) = 0{,}215$ (2)

2.2 $\tan 3\beta = \sqrt{3}$ (2)

2.3 $3\sin\frac{\beta}{2} = 2{,}012$ (3)
[7]

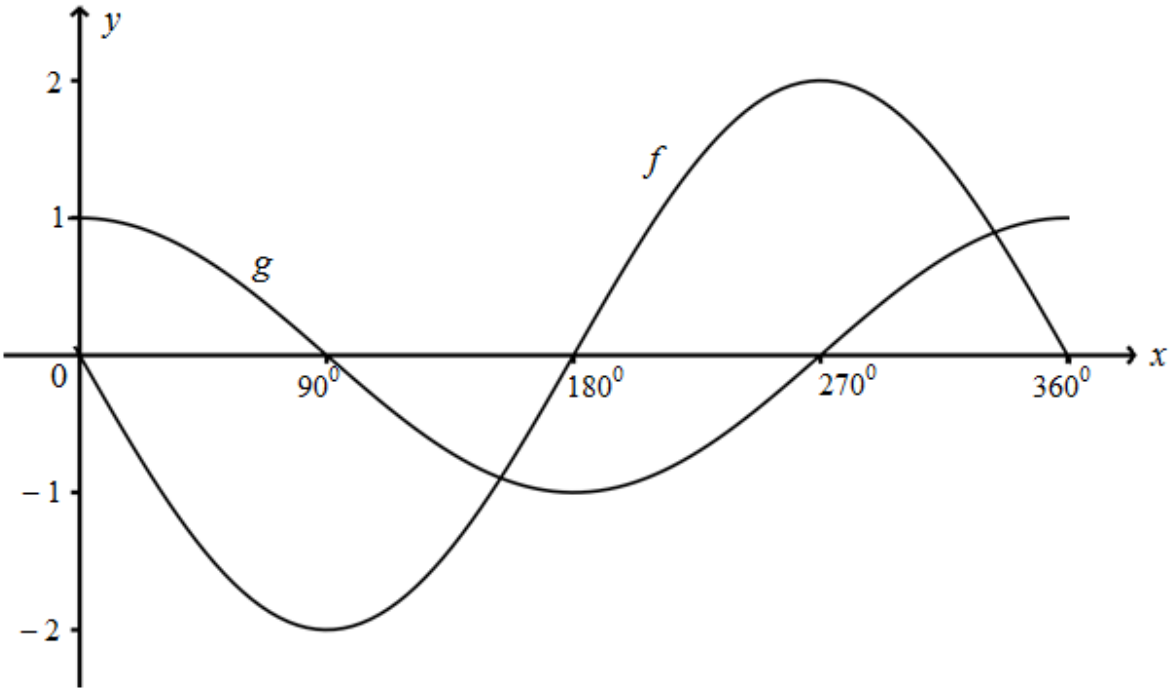
QUESTION 3

Determine the value of θ if $\theta \in [0°; 90°]$, without the use of a calculator.

$$\frac{tan\ 30°°.cosec\ 60°}{cos\ 45°.sin\ 45°}$$ (4)
[4]

QUESTION 4

The diagram below represents the graphs of $f(x) = a\sin x$ and $g(x) = b\cos x$ for $x \in [0^\circ;360^\circ]$.



4.1 Write down the values of a and b. (2)

4.2 For which value(s) of x will g be a decreasing function? (2)

4.3 What is the amplitude of f? (1)

4.4 What is the range of g? (2)

4.5 For which value(s) of x is $f(x) - g(x) = 2$? (1)

[8]

QUESTION 5

Use the list of quadrilaterals given below to answer the questions that follow.

- Parallelogram
- Rectangle
- Rhombus
- Square
- Kite
- Trapezium

Write down the name of the quadrilateral(s) that have the following properties:

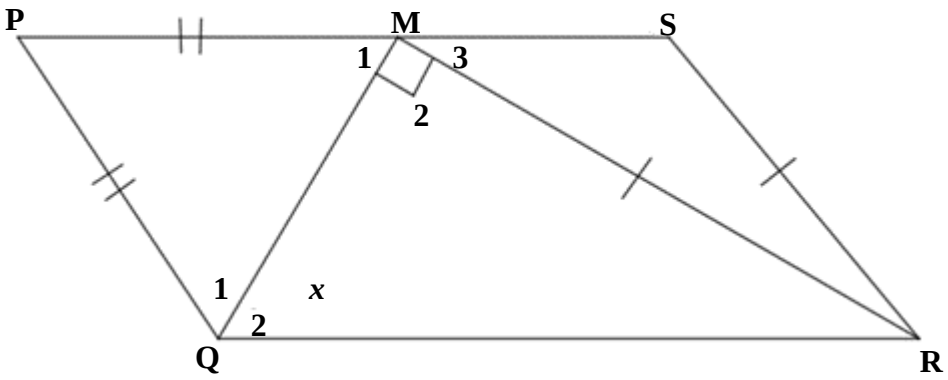
5.1 Diagonals bisect the interior angles (1)

5.2 Diagonals have the same length (1)

5.3 Diagonals bisect the area of the quadrilateral (2)
[4]

QUESTION 6

PQRS is a parallelogram with M on PS such that PM = PQ and SM = SR.
$\hat{QMR} = 90°$ and $\hat{Q}_2 = x$.



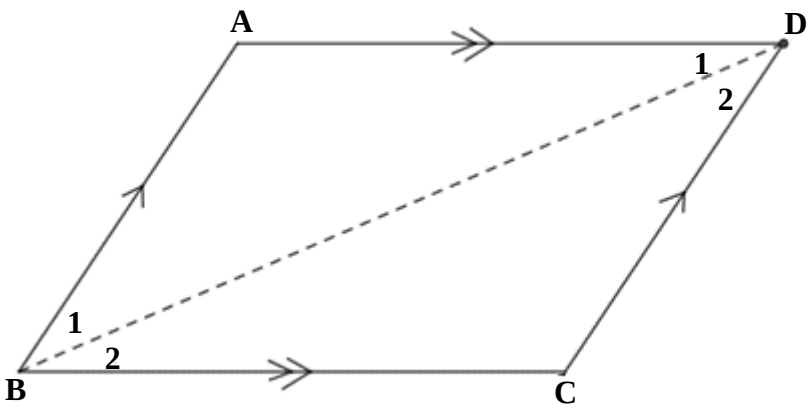
6.1 Determine, with reasons, two other angles which are equal to x. (4)

6.2 Determine the size of $\hat{M}_3$ in terms of x. (2)

6.3 Calculate the numerical value of x. (2)
[8]

QUESTION 7

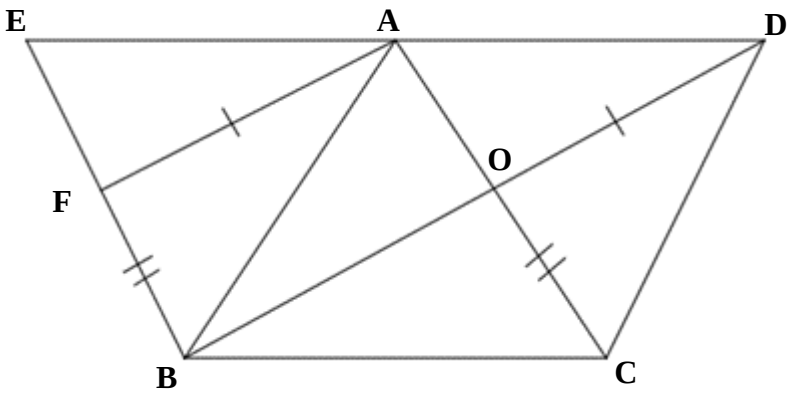
ABCD is a parallelogram with AD ‖ BC and BA ‖ CD.



Using the diagram above, prove the theorem that states that the opposite sides of a parallelogram are equal. **[5]**

QUESTION 8

ABCD is a parallelogram. BD and AC intersect at O. AF = OD, CO = FB.
DA and BF produced meet at E.



8.1 Prove that BOAF is a parallelogram. (4)

8.2 Prove that AD = EA. (4)
[8]

TOTAL: 50

END