



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

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**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
NOVEMBER 2020
GRADE 10**

**MATHEMATICS
(PAPER 2)**

**TIME: 1 hour
MARKS: 50**

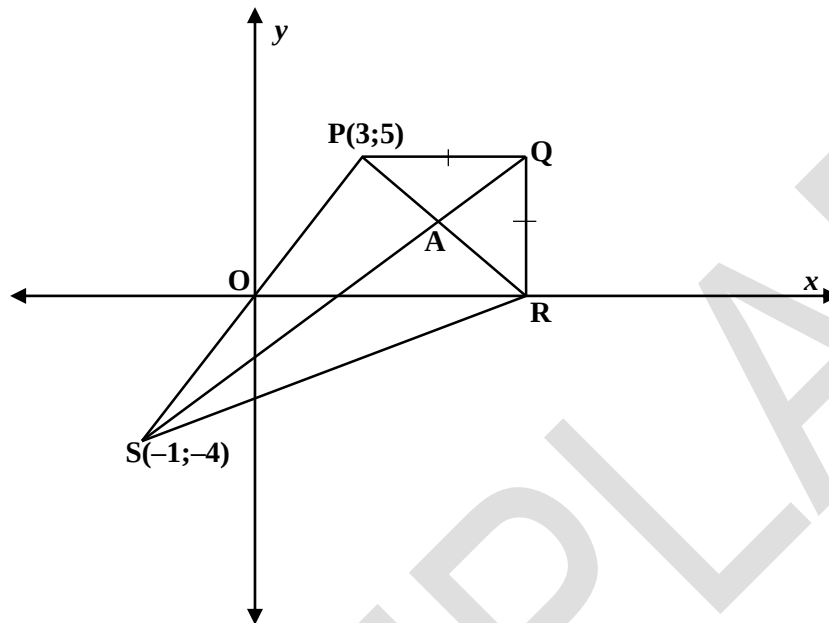
6 pages and 1 diagram sheet

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **THREE** questions and **ONE** diagram sheet.
2. Answer **ALL** the questions.
3. Clearly show **ALL** calculations, diagrams, graphs, etc. which were used in determining the answers.
4. Answers **ONLY** will not necessarily be awarded full marks.
5. Use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. Where necessary, answers should be rounded-off to **TWO** decimal places, unless stated otherwise.
7. Diagrams are **NOT** necessarily drawn to scale.
8. Number the questions correctly according to the numbering system used in this question paper.
9. Write neatly and legibly.

QUESTION 1

In the diagram below PQRS is a kite with $P(3; 5)$, $S(-1; -4)$. $PQ = QR$ and $PS = RS$. Q is a point such that PQ is parallel to the x -axis and $PQ = 5$ units. RQ is perpendicular to the x -axis. The diagonals intersect at A.



- 1.1 Show that the coordinates of R are $(8; 0)$. (4)
- 1.2 Write down the coordinates of A. (2)
- 1.3 Calculate the gradient of SQ. (3)
- 1.4 Determine the length of PR. (2)
- 1.5 Calculate the area of the kite PQRS. (3)
- 1.6 Show that PR is perpendicular to SQ. (3)
- 1.7 Show that $\triangle PSR$ is an isosceles triangle. (4)

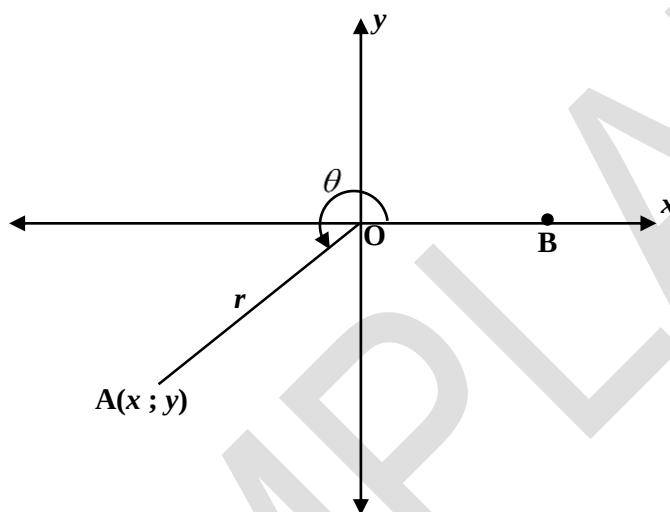
[21]

QUESTION 2

2.1 Determine the value of $\sec 75^\circ$ and round-off your answer to TWO decimal places. (2)

2.2 Simplify $\frac{\sin 90^\circ - \cos 60^\circ}{\tan 45^\circ}$ without the use of a calculator. (2)

2.3 In the diagram below, $A(x; y)$ is a point in the third quadrant, $\hat{BOA} = \theta$ and $5\sin \theta + 3 = 0$.



2.3.1 Determine the value of $30 \tan \theta$ without using a calculator. (6)

2.3.2 Calculate the size of $\hat{BOA}$, correct to TWO decimal places. (1)

[11]

QUESTION 3

3.1 Consider the function $f(x) = 2 \sin x$.

3.1.1 Sketch the graph of f on the given diagram sheet for $0^\circ \leq x \leq 360^\circ$.
Clearly show all the intercepts with the axes. (2)

3.1.2 Write down the:

(i) period of f . (1)

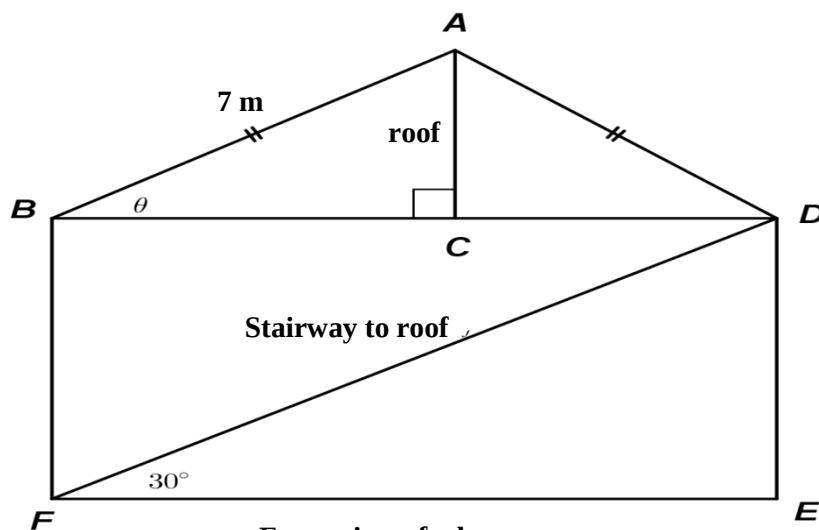
(ii) equation of h , if h is the reflection of f about the x -axis. (1)

3.2 Solve for x , correct to ONE decimal place where $0^\circ \leq x \leq 90^\circ$.

3.2.1 $4 \tan x + 1 = 3$ (3)

3.2.2 $\frac{\operatorname{cosec} x}{3} = 2$ (3)

- 3.3 An architectural design of the front of a house is given below. The length of the house is 10 meters. An exterior stairway leading to the roof forms an angle of elevation of 30° with ground level. The slanted part of the roof is 7 meters in length.



Front view of a house

- 3.3.1 Calculate the length of the vertical wall DE. Leave answer in simplest surd form. (2)
- 3.3.2 Calculate θ , the angle of elevation at the top of the roof (A) from the ceiling BCD, correct to TWO decimal places. (3)
- 3.3.3 Calculate the length of the beam AC, correct to TWO decimal places. (3)

[18]

TOTAL: 50

DIAGRAM SHEET

NAME: _____

QUESTION 3.1.1

