GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2018

GRADE 10

MATHEMATICS
PAPER 2

TIME: 1 hour

MARKS: 50

5 pages and 1 answer sheet

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INSTRUCTIONS

1 Answer ALL the questions.

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

3 Answers only will not necessarily be awarded full marks.

4 An approved scientific calculator (non-programmable and non-graphical) may be used, unless stated otherwise.

5 If necessary, answers should be rounded-off to TWO decimal places, unless stated otherwise.

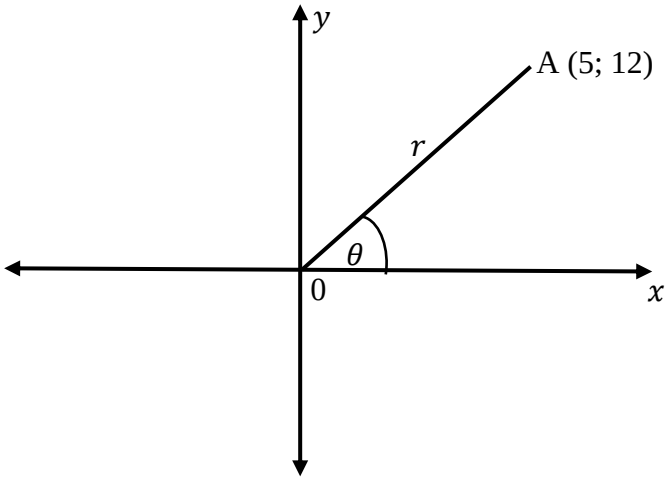
6 Diagrams are NOT necessarily drawn to scale.

7 Number your answers according to the numbering system use in this question paper.

8 It is in your interest to write legibly and to present your work neatly.

QUESTION 1

1.1 In the diagram below, A(5:12). Use the diagram to answer the following questions.



1.1.1 Determine the value of r. (2)

1.1.2 Calculate the value of $\sin\theta$ and $\cot\theta$. (2)

1.1.3 Prove that $\sin\theta . \cot\theta . \sec\theta = 1$ (2)
[6]

QUESTION 2

2.1 Determine the value of the following expression by using a calculator:

$$\frac{4\sin 120^\circ}{\tan 200^\circ - \cos 70^\circ}$$ (2)

2.2 Determine the value of θ in each of the following equations, correct to ONE decimal place, if $\theta < 90°$.

2.2.1 $3\cos\theta = 2,1$ (2)

2.2.2 $\sin(\theta + 25^\circ) = 0,845$ (2)
[6]

QUESTION 3

3.1 Without the use of a calculator (show all steps), determine the value of:

$$\cos 0^\circ + \sin^2 60^\circ + \sqrt{2}\sin 45^\circ$$ (4)

3.2 Find the value of x, without the use of a calculator.

$$x \,.\, \tan 60^\circ = \frac{\cos 50^\circ \,.\, \cos 30^\circ \,.\, \sec 50^\circ}{\tan 45^\circ}$$ (5)

3.3 Given: $f(x) = 2\tan x$
$g(x) = \cos x + 1$

3.3.1 Sketch the graphs of f and g on the same set of axes on the ANSWER SHEET on page 6 for $x \in [180^\circ; 180^\circ]$. (6)

3.3.2 Write down the amplitude of g. (1)

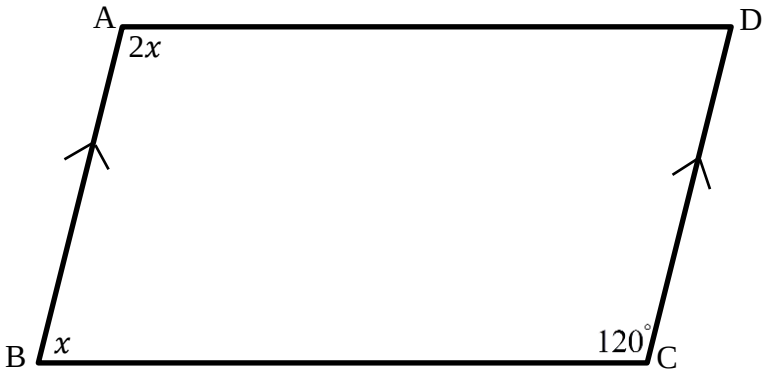
3.3.3 What is the period of f? (1)

3.3.4 For which values of x is $g(x) \geq 0$? (2)

[19]

QUESTION 4

In the diagram below quadrilateral ABCD, AB // CD; $\hat{A} = 2x$; $\hat{B} = x$ and $\hat{C} = 120^\circ$.



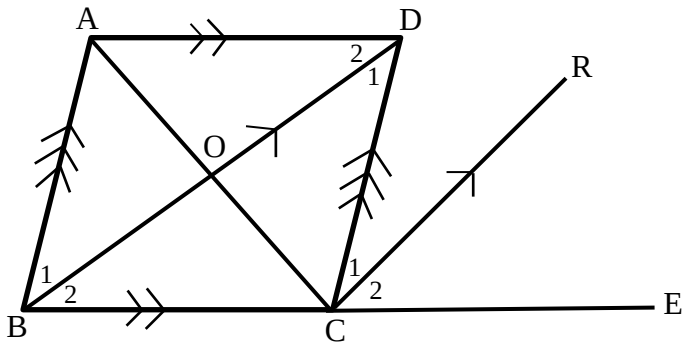
4.1 Prove that AD // BC. (4)

4.2 What type of quadrilateral is ABCD? Give a reason for your answer. (2)

[6]

QUESTION 5

In the diagram below is ABCD, a parallelogram. CR bisects $D\hat{C}E$ and CR // BD.



Prove that:

5.1 $BC = CD$ (5)

5.2 ABCD is a rhombus. (3)

5.3 If it is given that BD = 24 *cm* and AB = 13 *cm*, then AC = 10 *cm*. (5)

[13]

TOTAL: 50

END

ANSWER SHEET

HAND THIS ANSWER SHEET IN TOGETHER WITH YOUR ANSWER BOOK.

NAME: _____

GRADE: 10 _____

QUESTION 3

3.3.1