GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2018

GRADE 10

MATHEMATICS

(PAPER 1)

TIME: 1 hour
MARKS: 50

6 pages

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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 the answers correctly according to the numbering system used in this question paper.
8. It is in your interest to write legibly and to present your work neatly.

QUESTION 1

1.1 The value of $\sqrt{33}$ lies between two integers. Find these integers without finding the exact value of $\sqrt{33}$. (2)

1.2 Convert the following recurring decimal fraction $0,\dot{4}\dot{5}$ to a common fraction in its simplest form. (3)
[5]

QUESTION 2

2.1 Simplify:

2.1.1 $$\frac{(3x)^2(-2xy)^3}{2x^5y^4}$$ (3)

2.1.2 $$\left(\frac{1}{p}-q\right)\left(\frac{1}{p}+q\right)-\frac{q}{p^2}\left(\frac{1}{q}+qp^2\right)$$ (3)

2.2 Factorise completely:

2.2.1 $6p+40-p^2$ (3)

2.2.2 $-xy-(y-x)b+b^2$ (4)
[13]

QUESTION 3

3.1 Solve for x:

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

3.2 Solve for x if $x \in \mathbb{R}$, and illustrate your answer on a number line.

$$-2 \le \frac{x}{2}+1<3$$ (3)

[8]

QUESTION 4

4.1 The following pattern is given: 5 ; 8 ; 11 ; 14 ; …

Determine the general term of the pattern. (3)

4.2 $3x-7;\quad 2x;\quad 3x+1;....$ are the first three terms of a linear pattern.

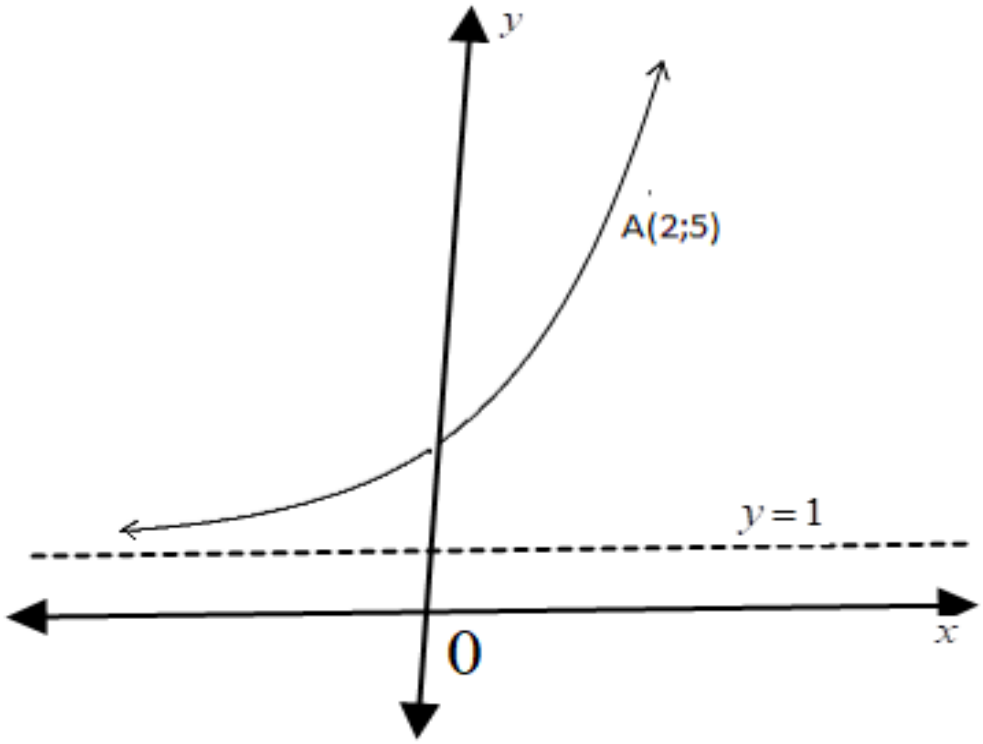
4.2.1 If the pattern continues in this manner, determine the value of x. (4)

4.2.2 Which term in the sequence is the first to be greater than 31? (3)

[10]

QUESTION 5

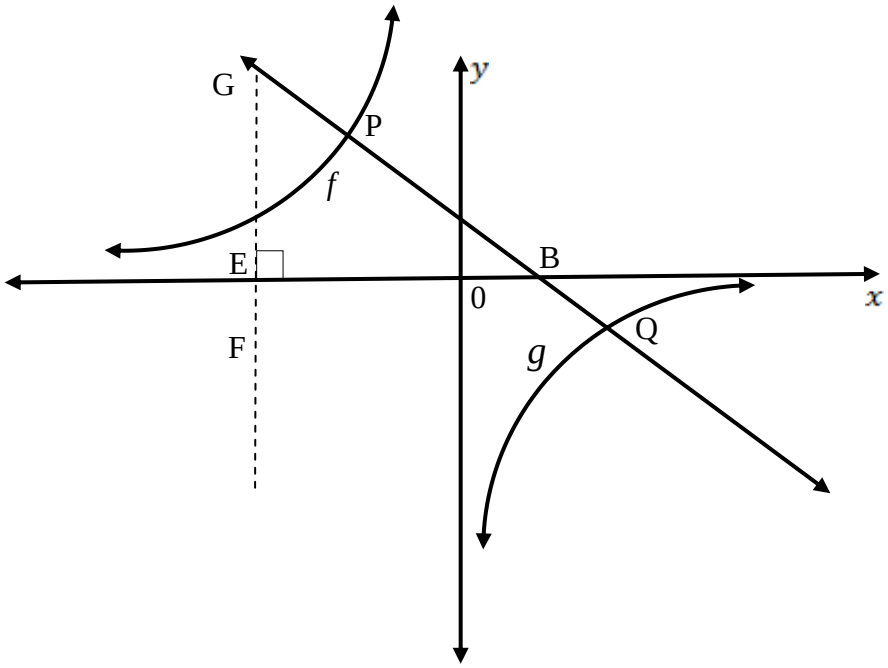
5.1 The sketch below shows the graph of $f(x) = b^x + q$. A point A(2;5) appears on the graph.



Calculate the values of b and q. (3)

5.2 Given: $f(x) = -x + 2$ and $g(x) = \frac{-3}{x}$, which is not drawn to scale.

P and Q are points of intersection of the graphs.



Determine:

5.2.1 The coordinates of P and Q. (6)

5.2.2 The coordinate of B. (2)

5.2.3 The length of GF if E(-6; 0). (3)

[14]

TOTAL: 50

END