



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION
VHEMBE EAST DISTRICT



VHEMBE EAST DISTRICT

**NATIONAL
SENIOR CERTIFICATE**

GRADE 10



**MATHEMATICS P1
MID YEAR EXAMINATION
JUNE 2022**

MARKS: 50
TIME: 1 hour

Stanmorephysics.com

This Question paper consists of 6 pages including the cover page.

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.

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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 $0,4\dot{5}$ to a common fraction in its simplest form. (3)
[5]

QUESTION 2

- 2.1 Simplify:

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

- 2.2 Factorise completely:

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

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

[10]

QUESTION 3

- 3.1 Solve for x:

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

- 3.2 Solve for x and illustrate your answer on a number line.

$$-2 \leq \frac{x}{2} < 3 \quad (3)$$

- 3.3 The sum of two consecutive numbers is 83. Find the numbers. (3)

[11]

QUESTION 4

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

Determine the general term of the pattern. (3)

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

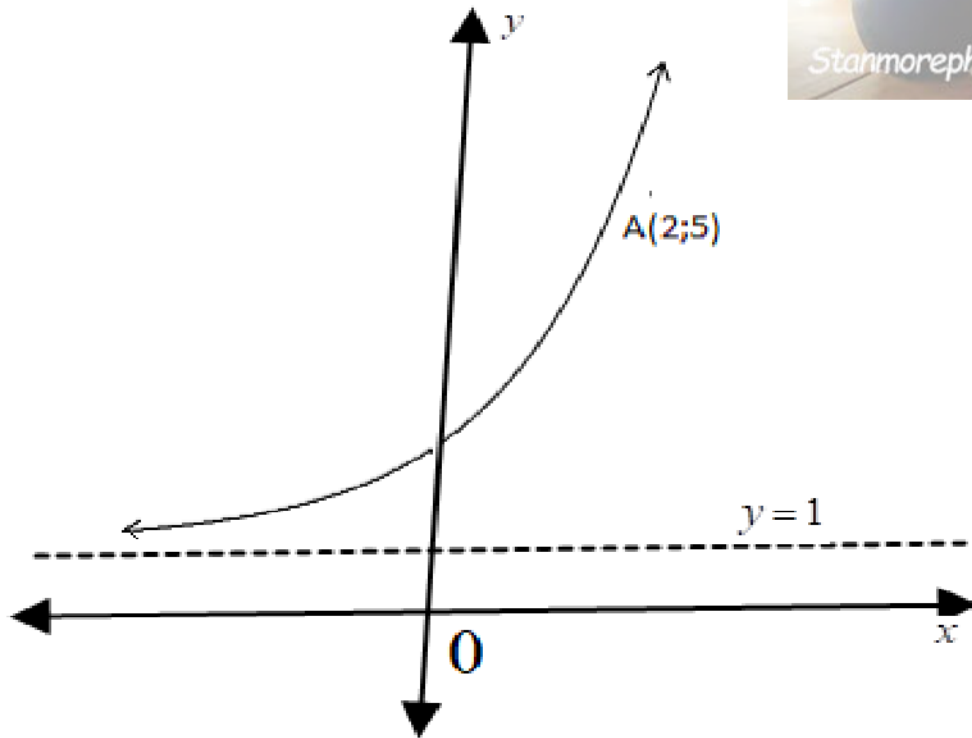
4.2.1 If the pattern continues in this manner, determine the value of x. (4)

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

[10]

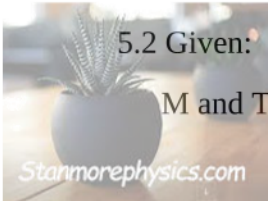
QUESTION 5

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



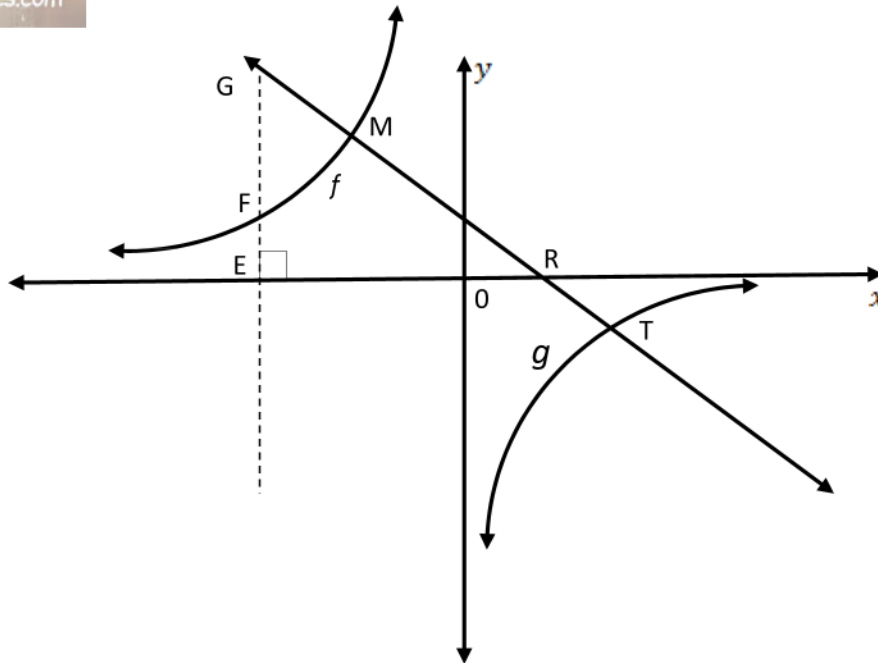
Calculate the values of b and q .

(3)



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

M and T are points of intersection of the graphs.



Determine:

- 5.2.1 The coordinates of M and T. (6)
- 5.2.2 The coordinates of R. (2)
- 5.2.3 The length of GF if E (-6; 0) and F is a point where GF intersect the graph of $f(x)$ (3)

[14]

TOTAL: 50



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GRADE 10

**MATH MEMO P1
MID YEAR EXAMINATION
JUNE 2022**

MARKS: 50

This memorandum consists of 4 pages including the cover page.

	QUESTION 1	
1.1	$25 < 33 < 36$ $25 < 33 < 36$ $5 < 33 < 6$ $\sqrt{33}$ lies between 5 and 6 	✓ 25 ; 36 ✓ answer (2)
	Let $x = 0,45454545$ $100x = 45,45454545$ $100x - x = 45$ $99x = 45$ $x = \frac{45}{99}$ $= \frac{5}{11}$	✓ $100x = 45,45454545$ ✓ $99x = 45$ ✓ answer (3)
	QUESTION 2	
2.1	$\frac{(3x)^2 (-2xy)^3}{2x^5 y^4} = \frac{3^2 x^2 (-2)^3 x^3 y^3}{2x^5 y^4}$ $= \frac{9x^{2+3-5} (-2)^3}{2y^{4-3}}$ $= \frac{9x^0 (-8)}{2y}$ $= \frac{-36}{y}$	✓ exponents ✓ simplifying ✓ answer (3)
2.2.1	$6p + 40 - p^2$ $= -(p^2 - 6p - 40)$ $= -(p-10)(p+4)$	✓ $-(p^2 - 6p - 40)$ ✓ $-(p-10)$ ✓ $(p+4)$ (3)
2.2.2	$-xy - (y - x)b + b^2 = -xy - by + bx + b^2$ $= -y(x + b) + b(x + b)$ $= (x + b)(-y + b)$	✓ $-xy - by + bx + b^2$ ✓ grouping ✓ $(x + b)$ ✓ $(-y + b)$ (4)
	QUESTION 3	
3.1	$\frac{x+2}{x^2-3x-4} = \frac{3}{x-4} - \frac{1}{2+2x}$ $\frac{x+2}{(x-4)(x+1)} = \frac{3}{x-4} - \frac{1}{2(x+1)}$	✓ correct factors ✓ $2(x+2)$

	<p>Multiply by CD: $2(x+1)(x-4)$:</p> $2(x+2) = 2 \times 3(x+1) - (x-4)$ $2x+4 = 6x+6-x+4$ $3x = -6$ $\therefore x = -2$	<p>✓ $6(x+1)$</p> <p>✓ $-x+4$</p> <p>✓ answer</p> <p>(5)</p>
3.2	$-2 \leq \frac{x}{2} + 1 < 3$ $-3 \leq \frac{x}{2} < 2$ $-6 \leq x < 4$ 	<p>✓ $-3 \leq \frac{x}{2} < 2$</p> <p>✓ $-6 \leq x < 4$</p> <p>✓ number line</p> <p>(3)</p>
3.3	<p>Let the first number be y The other number will be $y+1$ $\therefore y + (y+1) = 83$ $2y+1=83$ $2y=82$ $y=41$ The two numbers are 41 & 42</p>	<p>✓ y</p> <p>✓ equation</p> <p>✓ answers</p> <p>(3)</p>
QUESTION 4		
4.1	$T_1 = 3(1) + 2 = 5$ $T_2 = 3(2) + 2 = 8$ $T_3 = 3(3) + 2 = 11$ $T_4 = 3(4) + 2 = 14$ $\therefore T_n = 3n + 2$ 	<p>✓ method</p> <p>✓ $3n$</p> <p>✓ 2</p> <p>(3)</p>
4.2.1	$3x-7; 2x; 3x+1; \dots$ $2x - (3x-7) = 3x+1 - 2x$ $2x - (3x-7) = 3x+1 - 2x$ $2x - 3x + 7 = x+1$ $2x - 3x + 7 = x+1$ $-2x = -6$ $-2x = -6$ $\therefore x = 3$ $\therefore x = 3$	<p>✓ d values</p> <p>✓ equate</p> <p>✓ simplify</p> <p>✓ answer</p> <p>(4)</p>
4.2.2	$2; 6; 10; \dots$ $T_n = 4n - 2$	<p>✓ $4n - 2 > 31$</p> <p>✓ $n > 8,25$</p>

	$4n - 2 > 31$ $4n > 33$ $n > 8,25$ $\therefore n = 9$	✓ conclusion (3)
	QUESTION 5	
5.1	$q = 1$ $y = b^x + 1$ $5 = b^2 + 1$ $b^2 = 4$ $\therefore b = 2$	✓ $q = 1$ ✓ subst coordinates ✓ $b = 2$ (3)
5.2.1	$y = -x + 2$(1) $y = \frac{-3}{x}$(2) Substitute (1) in (2): $-x + 2 = \frac{-3}{x}$ $-x^2 + 2x = -3$ $-x^2 + 2x = -3$ $x^2 - 2x - 3 = 0$ $x^2 - 2x - 3 = 0$ $(x - 3)(x + 1) = 0$ $x = 3$ or $x = -1$ $y = -(3) + 2$ or $y = -(-1) + 2$ $\therefore y = -1$ or $y = 3$ $M(3; -1)$ & $T(-1; 3)$	✓ substitution ✓ simplification ✓ factors ✓ x-values ✓ y-values ✓ coordinate form (6)
5.2.2	$R(2; 0)$	✓ 2 ✓ 0 (2)
5.2.3	$y = -(-6) + 2$ $GE = 8$ $y = \frac{-3}{-6}$ $EF = \frac{1}{2}$ $\therefore GF = 8 - \frac{1}{2}$ $= 7\frac{1}{2}$	✓ $GE = 8$ ✓ $EF = \frac{1}{2}$ ✓ $7\frac{1}{2}$ (3)