



Education and Sport Development

Department of Education and Sport Development

Departement van Onderwys en Sportontwikkeling

Lefapha la Thuto le Tlhabololo ya Metshameko

NORTH WEST PROVINCE

PROVINCIAL ASSESSMENT

GRADE 11

TECHNICAL MATHEMATICS P1

MID-YEAR EXAMINATION 2019

MARKS: 100

TIME: 2 hours

This question paper consists of 6 pages including 1 graph paper.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 5 questions, answer all questions.
2. Clearly show ALL calculations, diagrams, graphs, et cetera that you used to determine the answers.
3. Answer only will NOT be awarded full marks.
4. If necessary, round off to TWO decimal places, unless stated otherwise.
5. Diagrams are NOT necessarily drawn to scale.
6. Use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1

Solve the following equations

1.1 $6x^2 - x - 15 = 0$ (3)

1.2 $x^2 - 81 = 0$ (2)

1.3 $\frac{2x-1}{x+7} = \frac{x-2}{x-1}$ (5)

1.4 $2x^2 + 8x + 3 = 0$ (correct to 2 decimal place) (3)

[13]**QUESTION 2**

2.1 Solve the following inequality then write the solution in set builder notation and interval notation (5)

$$-2x^2 + 5x \geq -3$$

2.2 Solve the following simultaneously: (6)

$$y = -2x^2 + 9x - 9$$

$$y = -x - 1$$

2.3 Given: $E = \frac{1}{2} mv^2$

2.3.1 Hence make “V” the subject of the formula. (2)

2.3.2 Determine the value of V if E= 18 and M= 9 (2)

[15]**QUESTION 3**3.1 Without solving the equation: $3x^2 + 8x - 2 = 0$ classify the nature of its roots. (4)3.2 If $p(x^2 + x) = -9$ has equal roots ($p \neq 0$), determine the value(s) of p . (4)

3.3 A rectangle is 10 meters long and 3 meters wide. If the same amount is added to the length and to the breadth, the area is doubled. Calculate the amount. (4)

[12]

QUESTION 4

4.1 Simplify without using a calculator

4.1.1 $\frac{2(2a^4)^3}{16a^{12}}$ (3)

4.1.2 $\sqrt[5]{-32}$ (3)

4.1.3 $\frac{4}{3\sqrt{2}}$ (Leave your answer in surd form) (3)

4.1.4 $\log_2 0,125 - 2 \log_5 \sqrt{5} + \log_4 1$ (6)

4.1.5 $\log 40 + \log 5 - \log 2$ (4)

4.2 Solve the following equations

4.2.1 $3^{x+1} - 3^{x-1} = 8$ (5)

4.2.2 $5^x = 0,008$ (3)

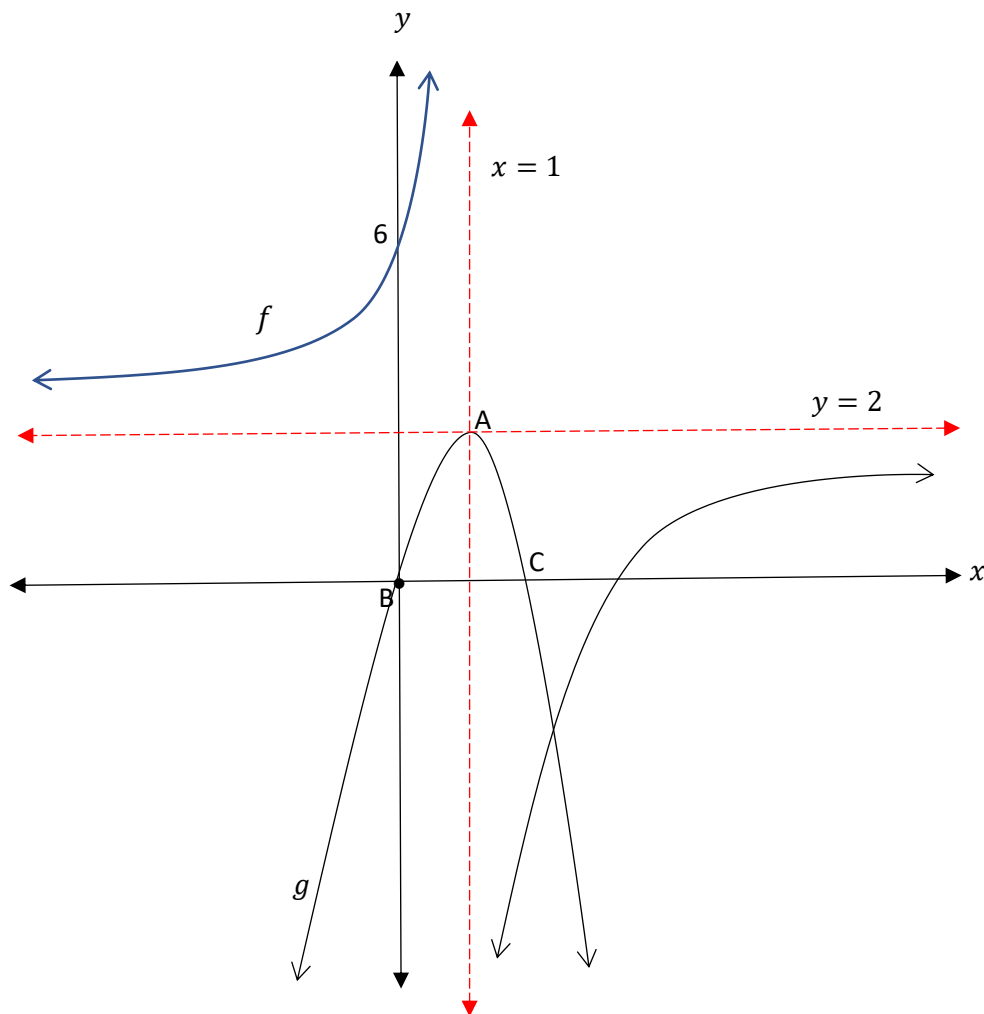
4.2.3 $7 \cdot 2^{3x+2} = 7$ (3)

4.2.4 $\log_{32} 2 = x$ (3)

4.2.5 $3^x = 2$ (3)

[36]**QUESTION 5**5.1 Given: $f(x) = 2^x + 1$ and $g(x) = -x + 2$ 5.1.1 Sketch both $f(x)$ and $g(x)$ on the same set of axes, on the diagram sheet (5)5.1.2 Write down the equation of the asymptote of $f(x)$ (1)

5.2 Given $f(x) = \frac{k}{x-p} + q$ And $g(x) = -2x^2 + 4x$. A is the turning point of the parabola.



- 5.2.1 Find the equation of f (5)
- 5.2.2 State the domain and range of f (2)
- 5.2.3 Write the equations of the symmetry lines of f (4)
- 5.2.4 Write the co-ordinates of B and C (3)
- 5.2.5 Write down the co-ordinates of A (4)

[24]

GRAND TOTAL: 100

