



GRADE 10

FINAL ASSESSMENT PAPER 1

NOVEMBER 2015

TOTAL: 100

TIME: 2 hours

INSTRUCTIONS

1. This question paper consists of 7 questions
2. Answer all the questions.
3. Clearly show all calculations used to solve problems.
4. You may use an approved scientific calculator, unless stated otherwise.
5. If necessary, round off answers correct to two decimal places.
6. Diagrams are not necessary drawn to scale.
7. Number the answers according to the questions.
8. Write neatly and legibly.

QUESTION 1:

1.1 Simplify the following:

1.1.1 $(6x - y)(x^2 + 2xy + y^2)$ (3)

1.1.2 $\frac{x^2 - 1}{x^2 + 2x + 1} \div \frac{3x + 3}{4x^2 - 3x - 1}$ (5)

1.2 Factorize the following expressions:

1.2.1 $x^2 - y^2 + x + y$ (3)

1.2.2 $2x^3 - 54$ (3)

1.3 Simplify the following: $\sqrt{9a^6 + 16a^6}$ (2)

1.4 Prove that $0,1\overline{9}$ is a rational number. (3)
[19]

QUESTION 2:

2.1 Solve for x without using a calculator:

2.1.1 $2x^2 - 12x = 32$ (3)

2.1.2 $4x^{\frac{3}{5}} = 108$ (3)

2.1.3 $\frac{a}{b}(x^2 + c) = 1$ (2)

2.1.4 $\frac{3x-1}{2} - \frac{3-1}{3} < \frac{x}{12} + 2$ and $x \in R$ (5)

2.2 Solve for a and b simultaneously:

$5a + 6b = 4$
 $3a + b = 5$ (5)

[18]

QUESTION 3:

3.1 17 ; $x + 2$; 7 ; 2 ; are the first four terms in a linear number pattern.

3.1.1 Calculate the value of x . (3)

3.1.2 Find the formula for T_n , the general term in the pattern. (3)

3.1.3 Which term in the sequence will have the value of -308? (3)

3.2 If $T_n = -(n + 1)^2$, determine the first three terms in the pattern (3)

3.3

fig.1



fig.2



fig.3



3.3.1 How many circles will be in the next figure? (2)

3.3.2 How many circles will be used in the sixth figure? (3)

[17]

QUESTION 4:

4.1 How long must an amount of money be invested at 10% SI per annum if the amount must be doubled? (4)

4.2 If an investment grows from R15 000 to R25 000 in 5 years, determine the rate if the interest is compounded per year. (4)

4.3 Use the given exchange rates to answer the questions:
\$ 1 : R9,10 and £ 1 : R11,25

4.3.1 How much money (in rand) is \$ 152 (2)

4.3.2 How much money is R3500 in £? (2)

[12]

QUESTION 5:

Given: $f(x) = \frac{4}{x} - 2$ and $g(x) = x + c$

5.1 Write down the equations of the asymptotes of $f(x)$. (2)

5.2 Find the value of the x-intercept of $f(x)$. (2)

5.3 Calculate the value of c if $g(x)$ is the symmetry line for $f(x)$. (2)

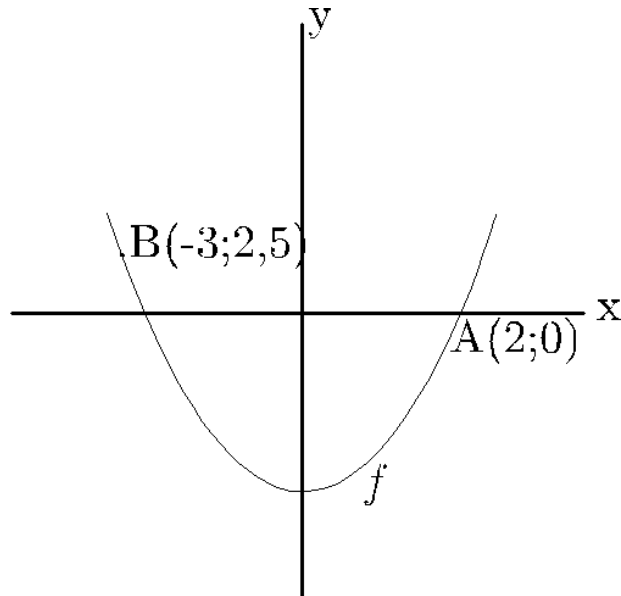
5.4 Write down the range of $f(x)$. (2)

5.5 Write down the coordinates of the x-intercept of $f(x)$ if $f(x)$ is reflected about the y-axis. (2)

[10]

QUESTION 6:

The graph of $f(x) = ax^2 + b$ is sketched below. The points A(2 ; 0) and B(-3 ; 2,5) lie on the graph of f .

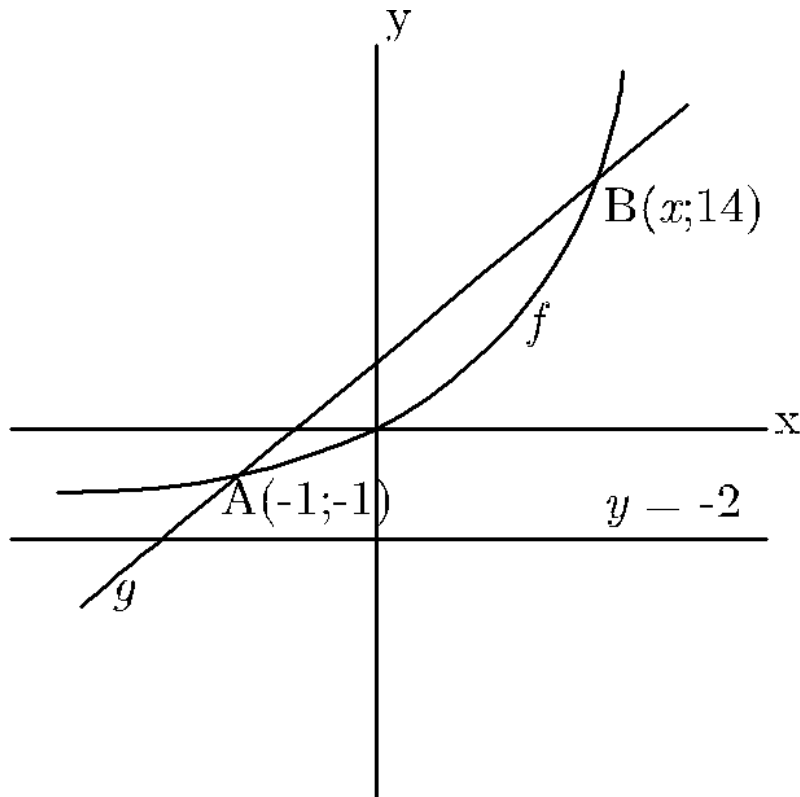


6.1 Find the equation of $f(x)$. (4)

- 6.2 Write down the range of $f(x)$. (2)
- 6.3 Find the equation of g , if g is the reflection of f in the x -axis. (2)
- 6.4 Write down the turning point for g . (2)

[10]

QUESTION 7:



- 7.1 If $f(x) = a.b^x + c$ find the equation of f . (5)
- 7.2 Calculate the value of x . (3)
- 7.3 Calculate the equation of $g(x) = mx + c$. (4)
- 7.4 For which value(s) of x will $f(x) \geq g(x)$? (2)

[14]

TOTAL: 100