



MATHEMATICS PROGRAMME FOR GRADE 10 LEARNERS FROM 18 MAY – 19 JUNE 2020

TOPIC: Functions

MARKS IN EXAMINATION PAPER: 30 +/- 3 Marks in Paper 2

MAIN RESOURCE(S) SUGGESTED: Everything Maths (Siyavula) grade 10

ADDITIONAL RESOURCES: Final Examination Question Papers

MEDIA: DSTV Channel 319

USE OF EVERYTHING MATHS (SIYAVULA) GRADE 10

5 WEEKS: 18 MAY – 18 JUNE 2020

USE EVERYTHING MATHS (SIYAVULA) GRADE 10 (PAGE 145 TO 230) AS FOLLOWS:

- It can be an advantage if one can first sign up to SIYAVULA (www.siyavula.com).
- To get answers for exercises use codes in the textbook below exercises and log in to SIYAVULA (www.siyavula.com)
- Read and follow the explanation about each sub-topic/ concept.
- Follow and practice Examples indicated 'WORKED EXAMPLES'.
- Then do Activities without looking at the solutions first.
- Then check your solutions against solutions provided.
- Then do corrections.
- Double or triple check if you are able to do Activities on your own without looking at the solutions until you master the concept(s).

WEEK 3: 18 – 22 MAY 2020

DATE	EXAMPLES	ACTIVITY	PAGE(S)
18/05	Read Explanation of Functions and Introduction to Functions from page 145 to page 148.	6 – 1 : Number 1 - 4	147 – 149
19/05		6 – 1 : Number 5 - 6	147 – 149
20/05		6 – 1 : Number 7 - 9	147 – 149
21/05	1	Go through Investigation of m and c in the Linear Function, $y = mx + c$	150 – 152
22/05		Do 'Discovering Characteristics'	152 – 153

WEEK 3: 25 – 29 MAY 2020

DATE	EXAMPLES	ACTIVITY	PAGE(S)
25/05	2 & 3	6 – 2 : Number 1 – 6	155 – 156
26/05		6 – 2 : Number 7 – 10	155 – 156
27/05	4	Go through Investigation of a and q in the Linear Function, $y = ax + q$	157 – 159
28/05			
29/05		Do 'Discovering Characteristics'	160

WEEK 3: 1 – 5 JUNE 2020

DATE	EXAMPLES	ACTIVITY	PAGE(S)
1/06	5	Domain and Range	161 – 162
2/06	6	Sketching the graph of $y = ax + q$	163
3/06	7	6 – 3 : Number 1 – 2	165 – 167
4/06		6 – 3 : Number 3 – 5	165 – 167
5/06		6 – 3 : Number 6 – 9	165 – 167

WEEK 4: 8 – 12 JUNE 2020

DATE	EXAMPLES	ACTIVITY	PAGE(S)
8/06	8	6 – 4 : Number 1 – 4	175 – 177
9/06	9	6 – 4 : Number 5 – 8	175 – 177
10/06	14	6 – 5 : Number 1 – 2	185 – 187
11/06	15	6 – 5 : Number 1 – 2	185 – 187
12/06	Revise all Algebraic Functions		

WEEK 5: 15 – 19 JUNE 2020

DATE	EXAMPLES	ACTIVITY	PAGE(S)
15/06	Go through Interpretation of Graphs focusing on Algebraic Graphs form page 208 to page 212	6 – 7 : Number 1	212 – 214
16/06		6 – 7 : Number 2	212 – 214
17/06		6 – 7 : Number 3	212 – 214
18/06		End of Chapter 6 – 8: Number 48 - 50	214 – 230
19/06	Revise all Algebraic Functions	End of Chapter 6 – 8: 51, 53 and 54	214 – 230

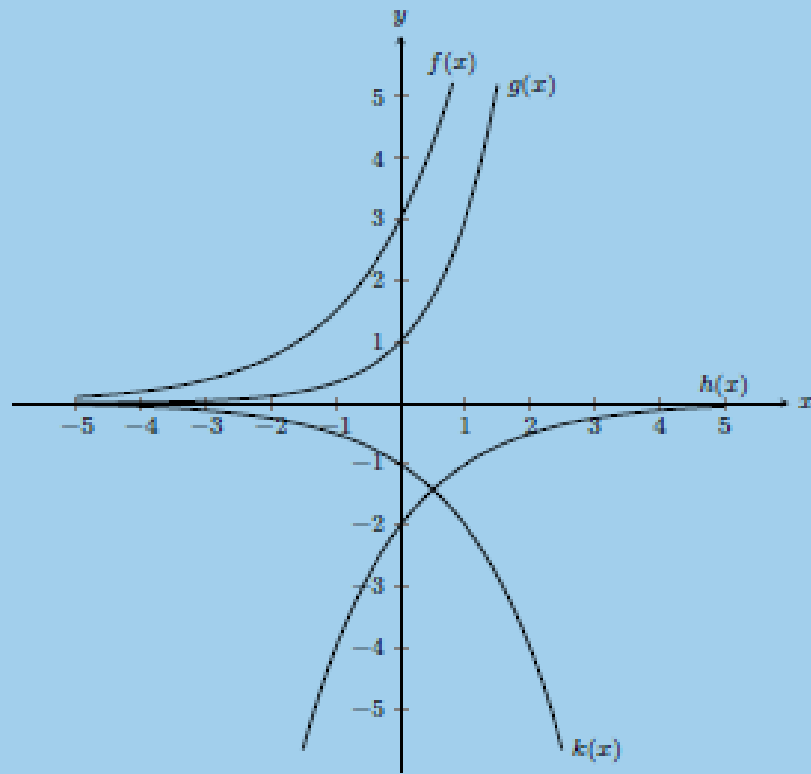
REMEMBER, PRACTICE MAKES PERFECT!**SO, PRACTICE, PRACTICE AND PRACTICE!**

building blocks for growth.

*Ikamva eliqaqambileyo!*

SOME END OF THE CHAPTER ACTIVITIES

26. Given the following graph, identify a function that matches each of the given equations



- a) $y = -2\left(\frac{1}{2}\right)^x$ b) $y = 3,2^x$ c) $y = -2^x$ d) $y = 3^x$

27. Use the functions $f(x) = 3 - x$, $g(x) = 2x^2 - 4$; $h(x) = 3^x - 4$; $k(x) = \frac{3}{2x} - 1$, to find the value of the following:

- a) $f(7)$ b) $g(1)$ c) $h(-4)$ d) $k(5)$
 e) $f(-1) + h(-3)$ f) $h(g(-2))$ g) $k(f(6))$

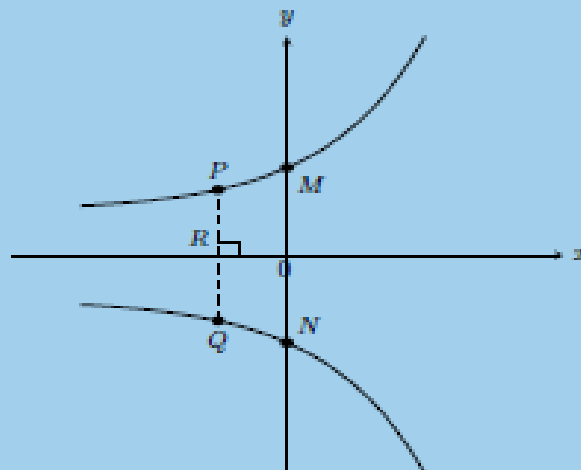
28. Determine whether the following statements are true or false. If the statement is false, give reasons why.

- The given or chosen y -value is known as the independent variable.
- A graph is said to be continuous if there are breaks in the graph.
- Functions of the form $y = ax + q$ are straight lines.
- Functions of the form $y = \frac{a}{x} + q$ are exponential functions.
- An asymptote is a straight line which a graph will intersect at least once.
- Given a function of the form $y = ax + q$, to find the y -intercept let $x = 0$ and solve for y .

29. Given the functions $f(x) = 2x^2 - 6$ and $g(x) = -2x + 6$.

- Draw f and g on the same set of axes.
- Calculate the points of intersection of f and g .
- Use your graphs and the points of intersection to solve for x when:
 - $f(x) > 0$
 - $g(x) < 0$
 - $f(x) \leq g(x)$
- Give the equation of the reflection of f in the x -axis.

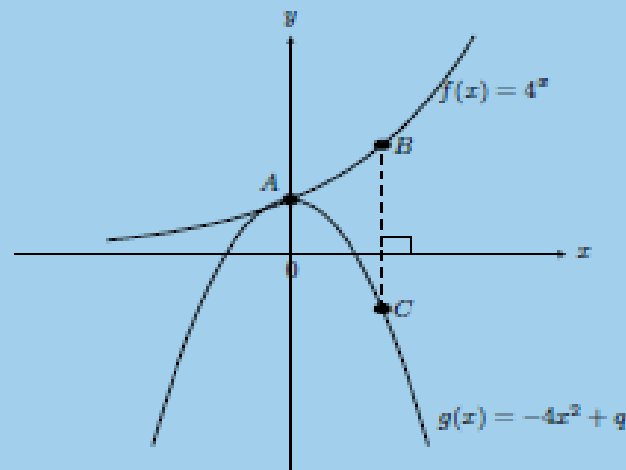
48. $y = 2^x$ and $y = -2^x$ are sketched below. Answer the questions that follow.



- Calculate the coordinates of M and N .
 - Calculate the length of MN .
 - Calculate the length of PQ if $OR = 1$ unit.
 - Give the equation of $y = 2^x$ reflected about the y -axis.
 - Give the range of both graphs.
49. Plot the following functions on the same set of axes and clearly label all points of intersection.

- $y = -2x^2 + 3$
 $y = 2x + 4$
- $y = x^2 - 4$
 $y = 3x$

50. $f(x) = 4^x$ and $g(x) = -4x^2 + q$ are sketched below. The points $A(0; 1)$ and $B(1; 4)$ are given. Answer the questions that follow.



- Determine the value of q .
- Calculate the length of BC .
- Give the equation of $f(x)$ reflected about the x -axis.
- Give the equation of $f(x)$ shifted vertically upwards by 1 unit.
- Give the equation of the asymptote of $f(x)$.
- Give the ranges of $f(x)$ and $g(x)$.

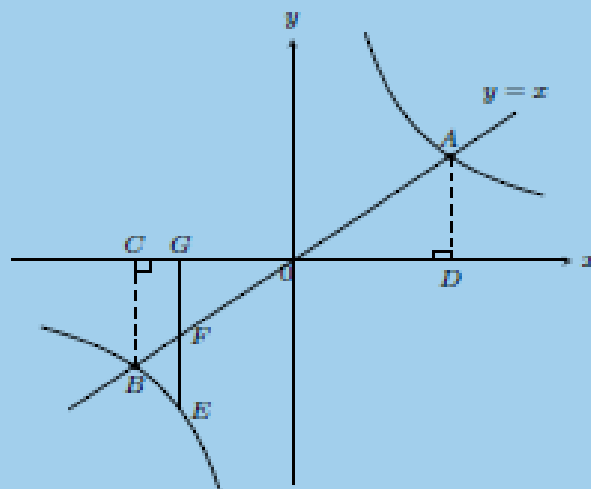
51. Given $h(x) = x^2 - 4$ and $k(x) = -x^2 + 4$. Answer the questions that follow.

- Sketch both graphs on the same set of axes.
- Describe the relationship between h and k .
- Give the equation of $k(x)$ reflected about the line $y = 4$.
- Give the domain and range of h .

52. Sketch the graphs of $f(\theta) = 2 \sin \theta$ and $g(\theta) = \cos \theta - 1$ on the same set of axes. Use your sketch to determine:

- $f(180^\circ)$
- $g(180^\circ)$
- $g(270^\circ) - f(270^\circ)$
- The domain and range of g .
- The amplitude and period of f .

53. The graphs of $y = x$ and $y = \frac{8}{x}$ are shown in the following diagram.



Calculate:

- The coordinates of points A and B .
- The length of CD .
- The length of AB .
- The length of EF , given $G(-2; 0)$.

54. Given the diagram with $y = -3x^2 + 3$ and $y = -\frac{18}{x}$.

