**Gr. 11 MATHEMATICS 2016 REVISION EXERCISES**

**FUNCTIONS AND GRAPHS 45 marks from PAPER 1**

1. Draw sketch graphs of each of the following:

In each case indicate intercepts with the axes and asymptotes (if any).

1.1  (Indicate one more point.)

1.2 

1.3 

1.4 

1.5 

1.6 

1.7 

In no. 1.8 – 1.11 also indicate the turning point:

1.8 

1.9 

1.10 

1.11 

1.12 

In no. 1.13 – 1.17 also indicate both the axes of symmetry.

1.13  (Indicate one more point.)

1.14 

1.15 

1.16 

1.17 

In no. 1.18 – 1.24 indicate one more point:

1.18 

1.19 

1.20 

1.21 

1.22 

1.23 

1.24 

For each of the following also give the domain

and the range of the function involved:

1.5; 1.9; 1.11; 1.13; 1.17; 1.19; 1,21

2. Determine the equations of the following graphs:

2.1



2.2



2.3



2.4



2.5



2.6



2.7



2.8



2.9



2.10



2.11



2.12



2.13



2.14

2.15



2.16 



2.17 



2.18 



2.19 



3. Below a sketch is shown of the function *f*.

Do not find the equation of *f*.



Redraw the sketch above and then draw on the same system of axes, a sketch graph of:

3.1 

3.2 

3.3 

3.4 

3.5 

3.6 

In each case, also describe in words the transformation that took place.

4. Draw a sketch graph of where and

has only one solution.

5. Given the functions  and :

* 1. Write down the coordinates of the turning point of .
  2. Calculate the roots of the equation .
  3. Write down the equation of the axis of symmetry of .

5.4 Sketch the graphs of *f* and *g* on the same system of axes

5.5 Determine the values of for which 

5.6 If the graph of *f* is shifted 4 units to the right, and 3 units down, write down the new equation of *f.*

5.7 Write down the range of *f* and of *g*.

6. Consider the function :

6.1 Write down the asymptotes of *f.*

6.2 Write down the axes of symmetry of *f.*

6.3 Draw a sketch graph of *f.* Clearly indicates all intercepts as well as the axes of symmetry.

6.4 For which values of *x* will ?

6.5 Calculate the average gradient between the points where *x=* –2 and *x*= 0.

7. Consider the graphs of the functions and :



7.1 Calculate the distance AB.

7.2 Determine the coordinates of C, the turning point of the parabola.

7.3 Calculate the coordinates of D and E, the points of intersection of the two graphs.

7.4 Calculate the length of FH if G is the point

(–½; 0).

8. Given 

8.1 Write down the equation of the asymptote of .

8.2 Determine the coordinates of the intercepts of  with the  and  axes.

8.3 Draw the graph of *h* showing all the intercepts with the axes and any asymptotes.

8.4 Write down the equation of the reflection of  in the  axis.

8.5 Write down the equation of the reflection of  in the *x-*axis.

**9. Questions from DBE CAPS Gr. 11 Papers:**

9.1 Exemplar 2013 Paper 1

no. 8, 9 and 10.

9.2 Nov. 2014 Paper 1

no. 6, 7 and 8.

9.3 Nov. 2015 Paper 1

no. 5, 6 and 7.

9.4 Nov. 2016 Paper 1

no. 5, 6 and 7

**Gr. 11 MATHEMATICS 2016 ANSWERS to REVISION EXERCISES**

**FUNCTIONS AND GRAPHS 45 marks from PAPER 1**

1.1



1.2



1.3



1.4



1.5



Domain: ; Range: 

1.6



1.7



1.8



1.9

Domain: ; Range: 

1.10



1.11



Domain: ; Range: 

1.12



1.13



Domain: ; Range: 

1.14



1.15



1.16



1.17



Domain: ; Range: 

1.18



1.19



Domain: ; Range: 

1.20



1.21



Domain: ; Range: 

1.22



1.23



1.24



2.1 

2.2 

2.3 

2.4 

2.5 

2.6 

2.7 

2.8 

2.9 

2.10 

2.11 

2.12 

2.13 

2.14 

2.15 

2.16 

2.17 

2.18 

2.19 

3.1



*g* is a reflection of *f* in the *x*-axis

3.2



*h* is a reflection of *f* in the *y*-axis

3.3



*j* is a vertical stretch of *f*

3.4



a vertical (downward) shift

3.5



a horizontal shift (to the right)

3.6



Shift upward by 4 units and to the left by 1 unit

4.



5.1 

5.2 1; –3

5.3 

5.4



5.5 

5.6 

5.7 



6.1  

6.2 



6.3



6.4 

6.5 

7.1 6 units

7.2 

7.3 ; 

7.4 6 units

8.1 

8.2 ; 

8.3



8.4 

8.5 

**9.1 Exemplar 2013 Paper 1**

8.1 ; 

8.2 

8.3 

8.4 

8.5 

8.6 

9.1



9.2 5

9.3 

9.4 

9.5 

9.6 

10.



9**.2 Nov. 2014 Paper 1**

6.1 

6.2 

6.3



6.4 1

7.1 

7.2 3

7.3 

7.4 

8.1 

8.2 

8.3 

8.4 

8.5.1 

8.5.2 

8.5.3 

8.6 

8.7 1 unit

**9.3 Nov. 2015 Paper 1**

5.1.1 

5.1.2 

5.1.3 

5.1.4 

5.1.5 

5.2.1 

5.2.2 graph lies above asymptote 

5.2.3



5.2.4 shift of 7 units upwards

6.2 2

6.3 9

6.4.1 

6.4.2 

7.1 

7.2 –20

**9.4 Nov. 2016 Paper 1**

5.1

5.2

5.3

5.5

5.6

6.1

6.2

6.3.1 units

6.3.2 2 units

6.4 ;

6.5

7.2 4

7.3 8

7.4

7.5