

Mathematics Gr.11 June Paper 1 (0001)

Time: 2H

Total :100 marks

Question 1: [14]

Solve for x . Where necessary, round off to 2 decimals:

1.1 $(x + 1)(2x - 1) = 0$ (2)

1.2 $(2x - 1)(x + 4) = -4$ (4)

1.3 $(x^2 - 2x)^2 = 9$ (6)

1.4 $4x^2 + 9 = 0$ (2)

Question 2: [7]

Solve for y :

$$\frac{y}{y+1} + \frac{2y}{y-1} - \frac{y^2+3}{y^2-1} = \frac{9}{4}$$

Question 3: [10]

3.1 Solve for k : $k^2 - k - 20 = 0$ (3)

3.2 Use you answer in 3.1 and solve for x :

$$(x^2 + 4x)^2 - (x^2 + 4x) - 20 = 0 \quad (7)$$

Question 4: [8]

Solve for x . Remember to check your answers!

$$x + \sqrt{2x - 5} = 2$$

Question 5: [8]

Solve for x and y :

$$x^2 + 2xy = 3y^2 - 7 \quad \text{and} \quad 3x - y = 1$$

Question 6: [15]

No calculator may be used in this question!

6.1 Simplify: (a) $\frac{12^{x+1} \times 9^{x-2} \times 3^x}{18^{2x-1}}$ (5)

(b) $\sqrt{27} - \sqrt{3} - \sqrt{12}$ (3)

6.2 Solve for x : (a) $2x^{-\frac{3}{2}} = 54$ (3)

(b) $2^{3x+1} + 2^{3x} = 12$ (4)

Question 7:[10]

The second difference in a quadratic sequence is 2.
The first two terms of the sequence is 2 and 9.

7.1 Determine the n^{th} term of the sequence. (5)

7.2 Which term of the sequence will be equal to 218? (5)

Question 8:[7]

8.1 Sketch the following graphs on the same systems of axes:
Show all intersections with the axes clearly. (6)

$$p(x) = \frac{-4}{x+2} + 1 \quad \text{and} \quad t(x) = 2$$

8.2 Determine the coordinates of $p \cap t$. (1)

Question 9: [8]

9.1 Determine the nature of the roots, without solving the equation:

$$4x^2 + 2(x - 1) = 3 \quad (4)$$

9.2 Determine the value(s) of k if $kx^2 + 2x - 3 = 0$
has non-real roots. (4)

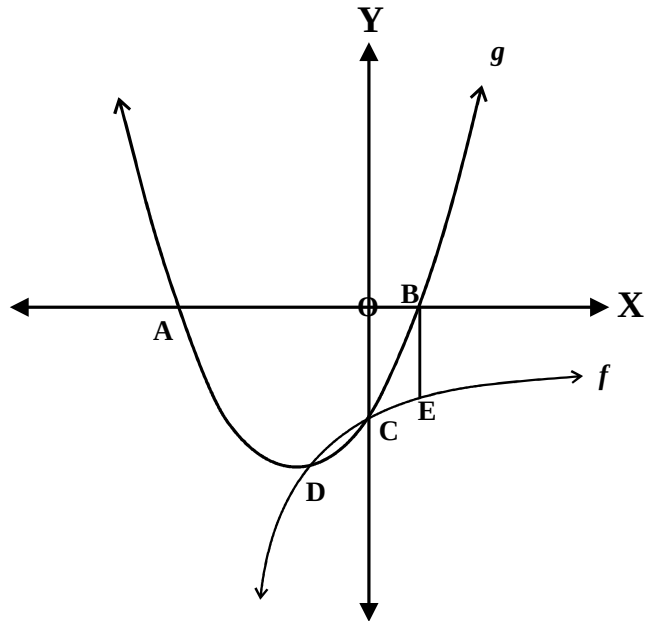
Question 10: [13]

$$f(x) = -a^{x+p} - 2$$

$$g(x) = x^2 + 2x - 3$$

D is the turning point of g .

$BE \perp x$ -axis



- 10.1 Determine the length of AB. (3)**
- 10.2 Determine the coordinates of D. (2)**
- 10.3 Calculate the values of a and p . (3)**
- 10.4 Determine the length of BE. (3)**
- 10.5 Write down the equation of $h(x)$ if $h(x)$ the reflection of $f(x)$ in the y -axis. (1)**
- 10.6 Determine for which value(s) of x will $f(x) > g(x)$. (1)**