

QUESTION 1

Candidates scored well in the question as a whole. In Question 1.1.1, those who opted to solve this problem by taking the square root on both sides, neglected to remember that there are two solutions, i.e. $\pm\sqrt{16}$.

1.1.2 was also answered fairly well. Candidates found it a problem making x the subject of the formula in the linear equation. When this was achieved, the most common problem was removing the indicated bracket after the substitution, i.e.

$$(3 - 2y)^2 - 2(3 - 2y)y - 4y = 0.$$

The y outside the bracket was forgotten giving:

$$4y^2 - 12y + 9 + 4y - 6 - 4y = 0, \text{ leading to a quadratic trinomial in } y, \text{ i.e.}$$

$$4y^2 - 12y + 3 = 0$$

In solving this equation, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ was used to erroneous values for x and y .

QUESTION 2

Candidates had a problem with the concept of “roots” and therefore interchanged between solving the equation, using the root and nature of the roots.

The incorrect use of the division line in the formula led to erroneous answers. Rounding off was not properly done.

Many candidates offered answers even though there was a negative under the $\sqrt{\quad}$.

QUESTION 3

In 3.1 candidates seemed to struggle with the basic concept of the remainder. In certain cases $x = 7$ was substituted and the equation set to zero, i.e. $f(7) = 0$

In the majority of cases, $x = 1$ was substituted and the equation set to 0, i.e. $f(1) = 0$

Very few candidates got 3.2 correct. Many realised that they had to substitute $x = -3$ into the equation. However, they missed the “hence” and neglected to substitute their value for a into the equation.

QUESTION 4

Candidates struggled with the graphs, mainly because of lack of interpretation skills. Often there was no correlation between their calculations and the representation. A mechanistic approach to this section of work leads to this lack of insight.

In 4.1.4a most of the students used $A(-3; 0)$ and $C(0; 3)$, but substituted incorrectly, i.e.

$m_{AC} = \frac{3-0}{0-3} = -1$ and failed to realise that according to the sketch, the gradient of AC could not be negative.

In 4.1.4b the value of m was not a problem, but very few candidates could find the value of c . The candidates used point C of line AC in most of the calculations.

4.1.5 was very poorly answered. Most candidates used Δ and ignored the instruction to use the graph, because they were unable to make the link between the algebraic manipulation and the graphical representation.

4.2.1 was poorly answered. The graphs ranged from straight lines to semi-circles.

4.2.2 was also poorly answered. For meet candidates, the range depended on which points they plotted on their graph.

QUESTION 5

Candidates need to be constantly exposed to Grade 11 work. Different approaches to the solution of indices and logs need to be explored so that candidates have a variety of options. 5.1.4 particularly posed a problem because of the mixture of logs and indices.

QUESTION 6

An intuitive logic instead of solely relying on formulae, proved valuable to some candidates. There is still mixing of formulae of AS and GS. In 6.4, the most common error was the swapping of values of A and P and not knowing how to use logs.

QUESTION 7

In 7.1 candidates lost marks because of sloppy notation.

7.2 proved to be challenging because of “a” instead of “x”. Understanding of what the gradient of the tangent means was lacking.

7.3 was well answered except for the regular abuse of the equal sign.

QUESTION 8

There is a dire need to teach our candidates to follow instructions and number questions correctly. This question particularly exposed the fact that candidates do not always present their work as asked, but rather as they wish. It also bought in the question of their understanding. It is always problematic to have a “rules without reason” approach to Mathematics.

8.4 was badly answered. Many candidates still struggled to obtain the middle term of the quadratic trinomial. Many students solved for x after factorising.

8.3 was well answered.

8.4 was badly answered. Every year candidates are reminded of the most common error in this section, i.e. not to use $x = \frac{-b}{2a}$. However, the vast majority of the candidates made the same error.

In 8.5 the graphs were well drawn, based on the erroneous answers obtained by the candidates. Many of them had the general shape of the cubic curve. However, if the error in 8.4 was made, the graph became a parabola.

QUESTION 9

This was the worst answered question in the whole paper. Although it is a quite common problem, it again showed a lack of understanding of what was asked. The candidates simply tried any inconsistent algebraic manipulation.