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**MATHEMATICS  
Methods Units 1 & 2**

**Test 2 – Quadratic Functions, Polynomials and Other Functions**

**Chapters 5, 6 and 7**

**Semester 1 2020**

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**Section Two - Calculator Assumed**

Time allowed for this section

Working time for this section: 25 minutes

Marks available: 25 marks

## Material required/recommended for this section

##### To be provided by the supervisor

This Question/Answer booklet

Formula sheet

##### To be provided by the candidate

Standard items: pens, pencils, pencil sharpener, eraser, correction fluid, ruler, highlighters

Special items: drawing instruments, templates, notes on one unfolded sheet of A4 paper, and up to three calculators satisfying the conditions set by the Curriculum Council for this course.

## Important note to candidates

No other items may be used in this section of the examination. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

1. (11 marks)

For the cubic defined by

1. determine any stationary points and their nature [2]
2. state the coordinates of the zeros of the function [3]
3. state where the cubic changes concavity and what this point is called [2]
4. **describe** the curve over its natural domain [4]
5. (3 marks)

If the function defined passes through the points and , find the possible values of *p* and *q*.

1. (11 marks)

A farmer wants to make an enclosure for her sheep. She has 50 metres of fencing and will use it to make a rectangular enclosure using and existing fence along one side.

1. Show that the area of the enclosure is given by . [3]
2. On the axes below, sketch the area function labelling key features. [4]



1. Use your calculator, or otherwise, to determine the maximum area of this enclosure. [1]
2. What are the dimensions of the enclosure for maximum area. [1]
3. The enclosure must have an area of at least 120 square metres. What value(s) of *x* will meet this requirement. [2]

**End of Test**