**IGCSEFM Increasing Functions and Stationary Points – Past Paper Questions**

**Question 1**: [June 2012 Paper 2 Q20] For what values of is an increasing function?

**Question 2**: [Set 4 Paper 1 Q10] for al values of .
Show that is a decreasing function for all values .

**Question 3**: [Set 4 Paper 2 Q22] A sketch of , where is a cubic function, is shown.

There is a maximum point at .
(a) Write down the equation of the tangent to the curve at .
(b) Write down the equation of the normal to the curve at .
(c) Circle the word that describes the cubic function when .
 positive negative increasing decreasing

**Question 4**: [June 2013 Paper 2 Q8] A sketch of is shown. There are stationary points at and .

(a) Write down the equation of the tangent to the curve at .
(b) Write down the equation of the normal to the curve at .
(c) Circle the range of values of for which is an increasing function.

**Question 5**: [Set 2 Paper 2 Q12] A curve has equation

(c) Work out
(d) Work out the coordinates of the two stationary points on the curve.

**Question 6**: [Set 1 Paper 2 Q14] (a) Work out the stationary points on the curve .
(b) Sketch the curve



**Question 7**: [Set 3 Paper 1] A curve has equation
Work out the coordinates of any stationary points on this curve and determine their nature.

**Question 8**: [Specimen Paper 1 Q13] (a) Work out the coordinates of the stationary point for the curve .
(b) Explain why has no real solutions.

**Question 9**: [Jan 2013 Paper 1 Q13]
(a) Work out , giving your answer in the form , where and are integers.
(b) Hence, or otherwise, work out the coordinates of the stationary point of

(c) Explain how you know that this stationary point is a point of inflection.

**Question 10**: [June 2012 Paper 2 Q23] The curve is such that
The stationary points of the curve are at and .
Determine the nature of each stationary point. You **must** show your working.