**Calculator Assumed**

**Applications of Differentiation – Curve Sketching**

Time: 45 minutes

Total Marks: 45

Your Score: / 45



**Question One: [1, 2, 2, 2, 2 = 9 marks]**

Examine the graph drawn below.

1. State the y-intercept of the

function.

1. For what values of *x* is the

gradient zero?

1. For what values of *x* is the

gradient negative?

1. State the global maximum and the local minimum over the domain 
2. On the same set of axes, sketch a possible graph of .

**Question Two: [6 marks]**

A curve has equation . Determine the equations of the tangents to the curve at the *x* – intercepts.

**Question Three: [6 marks]**

On the axes below, sketch the function with the following features:



**Question Four: [6 marks]**

Show, using calculus methods, that the function has stationary points at .

Hence state the nature of each stationary point.

**Question Five: [5 marks]**

The equation of the tangent to the curve  at is .

Determine the value of *m* and *k*.

**Question Six: [8 marks]**

The graph of the function has a *y* – intercept at (0, 10) and only one stationary point located at .

Determine, using calculus methods, the values of *a*, *b* and *c*.

**Question Seven: [5 marks]**

The function has two stationary points, one at  and the other at .

Determine the values of *a* and *b* showing all working.

**SOLUTIONS**

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