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**MATHEMATICS**

**Specialist Units 3 & 4**

**Test 5 – Applications of Differentiation**

**Semester 2 2019**

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**Section One – Calculator Free**

Time allowed for this section

Working time for this section: 20 minutes

Marks available: 17 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: Nil

## 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. (5 marks: 2, 3)  
   A particle moves with velocity where is it’s displacement. The particle is initially 2 m to the right of the origin.
2. Show that the particle has constant acceleration
3. Determine the displacement, , as a function of time, .
4. (5 marks)

Determine the gradient of the tangent to the curve at the point (1, 1)

1. (7 marks: 1, 2, 4)

A screenshot of a computer

Description automatically generated

1. Circle the differential equation that best matches the slope field shown:

i) ii)

iii) iv)

1. Determine the value of the slope field at the point (2, 3) and draw the solution on the slope field above.
2. Determine the equation of the particular solution curve that passes through the point (2, 3).

**End of Section One**

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You may use this space to extend or re-attempt an answer to a question or questions and should you do so then number the question(s) attempted and cross out any previous unwanted working.