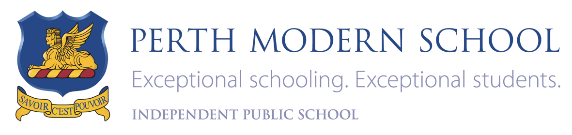
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**Mathematics Specialist**

**Unit 4**

**2017**

**TEST 5**

**SOLUTIONS**

**Student name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **Teacher name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Time allowed for this task: 40 *minutes***, in class, under test conditions

Calculator-Assumed

**Materials required:**

Standard items: Pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters, SCSA Formula Sheet.

Classpad Calculator and Scientific Calculator.

Special items: Drawing instruments, templates

**Marks available: *39 marks***

**Task weighting: 8%**

**Question 1. (7 marks)**

(a) A particle undergoing simple harmonic motion with a period of 5 seconds is observed to move in a straight line, oscillating 3.6 m either side of a central position. Determine the speed of the particle when it is 3 m from the central position. (3 marks)

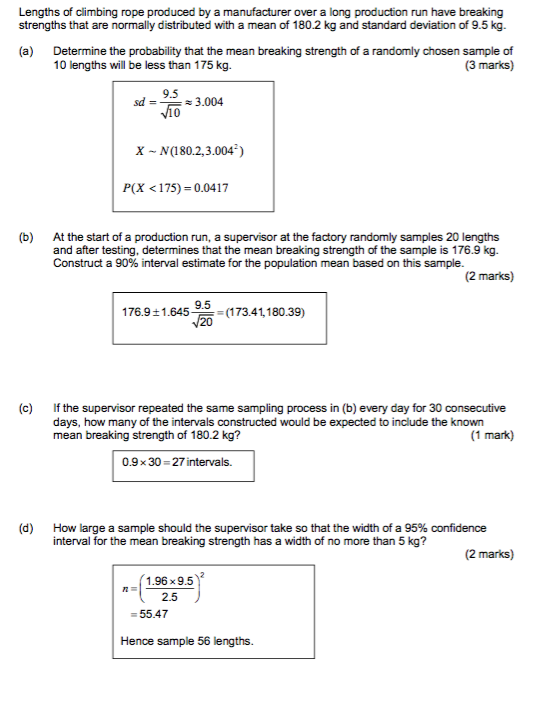
|  |
| --- |
| **Solution** |
|  |
| **Specific behaviours** |
| ✓ determines  ✓ substitutes into velocity equation  ✓ evaluates speed |

(b) Another particle moving in a straight line experiences an acceleration of ms-2, where is the position of the particle at time seconds.

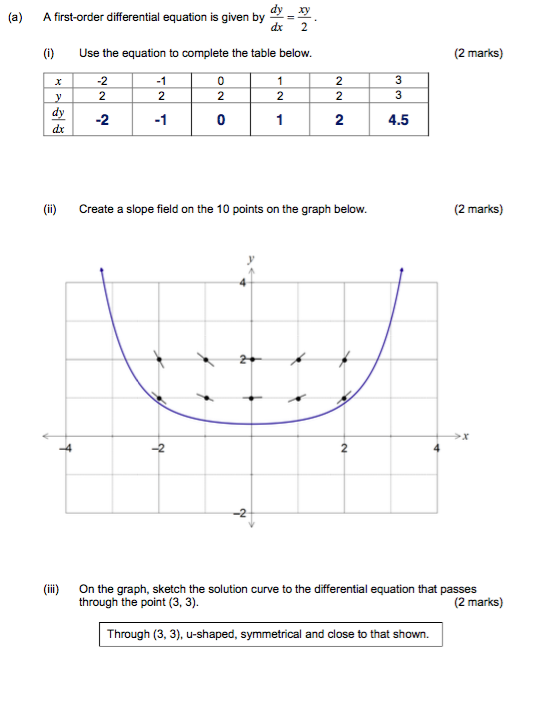
Given that when , the particle had a velocity of 2 ms-1, determine the velocity of the particle when . (4 marks)

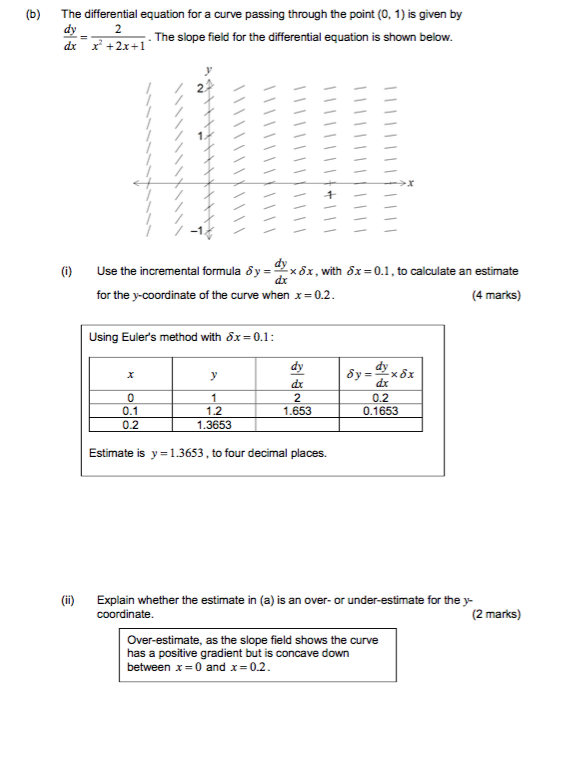
|  |
| --- |
| **Solution** |
|  |
| **Specific behaviours** |
| ✓ uses appropriate form of acceleration  ✓ integrates  ✓ evaluates constant  ✓ states all possible values of v |

Question 2. (8 marks)



Question 3. (12 marks)





Question 4. (12 marks)

