PC Crest Only Black **PERTH COLLEGE**

**YR 12 3CD SPECIALIST MATHEMATICS**

**SEMESTER ONE 2010**

**TEST 1**

**VECTORS (70%) DIFFERENTIATION (30% - functions 22%, trig 8%)**

**Simple (~70%) Complex (~30%)**

### Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Time Allowed: 60 minutes / 50 = %**

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| --- | --- |
| **SECTION ONE** | **/20** |
| **SECTION TWO** | **/30** |

**SECTION ONE: CALCULATOR FREE**

**TIME: 25 minutes TOTAL MARKS: 20**

* Answer all questions neatly in the spaces provided.
* **Show all working** where appropriate.
* **One side** of an A4 sheet of paper for notes is allowed for Section 2 only.
* Formula sheet may be used for both sections.

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**Question 1 (2, 1, 2 = 5 marks)**

Given

1. Find
2. Find
3. Find

**Question 2 (1, 1, 1, 2, 1, 1 = 7 marks)**

Three points in space are given:

Find:

1. The parametric equations of the line through P and Q.
2. The Vector equation of the plane through P, Q, and R in the form:

*ax + by + cz = d given d = 6*

*r.n = c*

*r = a + λb + μc*

**Question 3 (2, 1 = 3 marks)**

1. Two points in space are given;

Find the coordinates of M which divides QP in the ratio 2:5

1. Find a unit vector parallel to .

**Question 4 (1, 1, 1, 2 = 5 marks)**

Given the following functions find dy/dx:

1. ***(Answer in positive indices)***