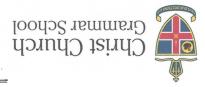
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MATHEMATICS METHODS Year 11

Calculator-free Section One:

Teacher name

Student name

sətunim &f Working time for this section: Reading time before commencing work: 2 minutes Time and marks available for this section

15 marks Marks available:

Formula Sheet This Question/Answer Booklet To be provided by the supervisor Materials required/recommended for this section

To be provided by the candidate

correction fluid/tape, eraser, ruler, highlighters Standard items: pens (blue/black preferred), pencils (including coloured), sharpener,

Special items:

Important note to candidates

to the supervisor before reading any further. nature in the examination room. If you have any unauthorised material with you, hand it ensure that you do not have any unauthorised notes or other items of a non-personal No other items may be taken into the examination room. It is your responsibility to

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MATHEMATICS METHODS Year 11

Instructions to candidates

- 1. Write your answers in this Question/Answer Booklet.
- 2. Answer all questions.
- You must be careful to confine your response to the specific question asked and to follow any instructions that are specific to a particular question.
- 4. Supplementary pages for the use of planning/continuing your answer to a question have been provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.
- 5. Show all your working clearly. Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than two marks, valid working or justification is required to receive full marks. If you repeat an answer to any question, ensure that you cancel the answer you do not wish to have marked.
- 6. It is recommended that you do not use pencil, except in diagrams.

See next page

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MATHEMATICS METHODS Year 11

7

Additional working space

Question	number.	

MATHEMATICS METHODS Year 11

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Question 1

(3 marks)

your answer in scientific form correct to two significant figures. 20000 peanuts. How many boxes of peanuts did the farmer produce last year? Give an average of 8 \times 10-4 kg. The farmer put the peanuts into boxes each containing Last year a peanut farmer produced $6\times10^4~kg$ of peanuts. The peanuts each weighed

$$(201 \times 3 + 501 \times 3 + 501$$

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MATHEMATICS METHODS Year 11

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(S marks)

4 noiteauQ

Consider the curve:

 $\lambda = 2x$

curve as a horizontal translation of 3 units right? What is the vertical dilation that would have the same transformation effect on this

.: vertical dillution of scale parter 125

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Question 2

(5 marks)

Determine the equation of the other tangent to the curve:

$$y = 1 - 3x + 12x^2 - 8x^3$$

which is parallel to the tangent at (1,2).

$$\frac{dy}{dx} = -3 + 24x - 24x^2 \quad \text{(for } \frac{dy}{dx})$$

at
$$x=1$$
 $\frac{dy}{dx} = -3 + 24(1) - 24(1)^{n}$
= -3 $\sqrt{m} \frac{dy}{dx} = x^{n} \times (-1)$

: parallel lines require gradient must be -3

7(1(-1)=0

When x=0, y=1 so other point is (0,1) (her other paint

So taugent is
$$y = -3\pi AC$$

 $use(0,1)$ $1 = -3 \times 0 + C$
 $C = 1$

:. other transport is 4=-3x+1 (for final answer)

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Question 3

(5 marks)

Simplify $16^{\frac{-3}{4}}$ giving your answer as a fraction. (2 marks) $16^{\frac{-3}{4}} = (2^{\frac{1}{4}})^{\frac{3}{4}} \qquad (\text{for using base of 2})$ $= 2^{-3}$ $= \frac{1}{8} \qquad (\text{Note: } \frac{1}{2^3} \text{ is also OK})$

5

Simplify the following expression:

$$= \frac{2^{2n} \times (3^{2})^{2n-1}}{6^{n-1}} \qquad (3 \text{ marks})$$

$$= \frac{2^{2n} \times (3^{2})^{2n-1}}{(2 \times 3)^{n-1}} \qquad (br w \text{ it has in kerms of has a 2 and 3})$$

$$= \frac{2^{2n} \times 3^{n-1}}{2^{n-1} \times 3^{n-1}} \qquad (br w \text{ it has without denominator})$$

$$= 2^{n+1} \times 3^{n-1} \qquad (br \text{ find answer})$$

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