

**‘2016 Examination Package’ -
Trial Examination 2 of 5**

STUDENT NUMBER

Figures

Words

Letter

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SPECIALIST MATHEMATICS

Units 3 & 4 – Written examination 1

(TSSM’s 2012 trial exam updated for the current study design)

Reading time: 15 minutes

Writing time: 1 hour

QUESTION & ANSWER BOOK

Structure of book

<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
10	10	40

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, and rulers.
- Students are NOT permitted to bring into the examination room: notes of any kind, a calculator, blank sheets of paper and/or white out liquid/tape.

Materials supplied

- Question and answer book of 13 pages.
- Working space is provided throughout the book.

Instructions

- Print your name in the space provided on the top of this page.
- All written responses must be in English.

Students are NOT permitted to bring mobile phones and/or any other electronic devices into the examination room.

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Question 2

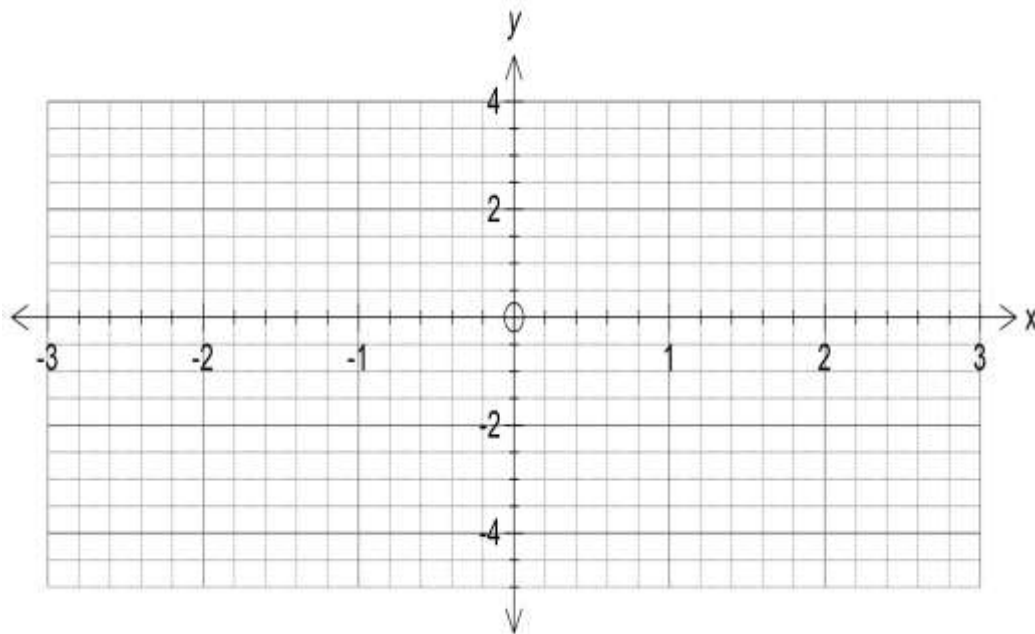
- a. Show that $y = \frac{(x-1)^2}{2x}$ can be written in the form $\frac{x}{2} - 1 + \frac{1}{2x}$.

1 mark

- b. Give the coordinates of any turning points and intercepts and state the equations of any straight line asymptotes.

3 marks

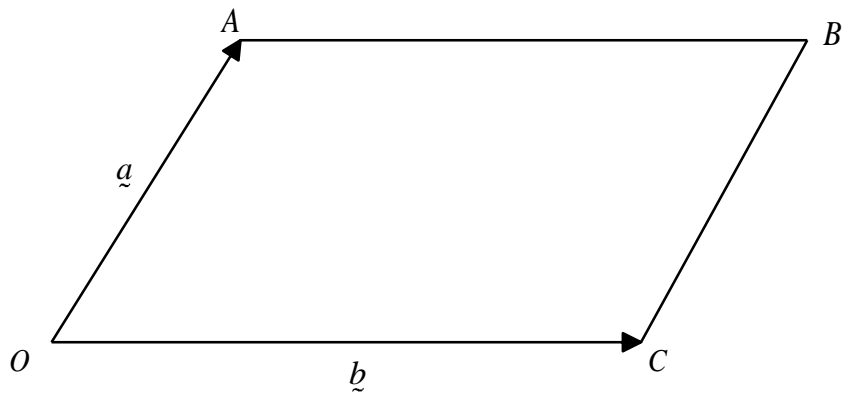
- c. Hence, sketch the graph of $y = \frac{(x-1)^2}{2x}$ on the axes provided.



2 marks

Question 6

In the parallelogram $OABC$, $\overrightarrow{OA} = \underline{a}$ and $\overrightarrow{OC} = \underline{b}$.



- a. Find expressions for the vectors \overrightarrow{OB} and \overrightarrow{AC} in terms of \underline{a} and \underline{b} .

1 mark

- b. If $\overrightarrow{OB} \perp \overrightarrow{AC}$ then prove that $OABC$ is a rhombus.

3 marks

