456/1

MATHEMATICS

PAPER I

JULY 2017

2 ½ HOURS

ST. JOSEPH OF NAZARETH HIGH SCHOOL

UGANDA CERTIFICATE OF EDUCATION

INTERNAL MOCKS EXAMINATION 2017

MATHEMATICS

PAPER I

2 ½ HOURS

**INSTRUCTIONS TO CANDIDATES:**

* Answer all questions in Section A and any five questions from Section B.
* Any additional question(s) answered will not be marked.
* All necessary calculators must be done in the answer booklet provided. Therefore, no paper should be given for rough work.
* Graph paper is provided.
* Silent, non – programmable scientific calculators and mathematical tables with a list of formulae may be used.

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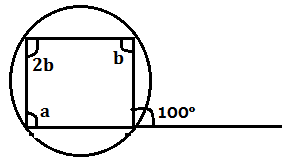
**SECTION A (40 MARKS)**

Attempt all questions in this.

1. Make the subject of the formula . (4 marks)
2. Find the integral values of x which satisfies the inequalities :

(4 marks)

1. Find the value of and in



(4 marks)

1. A point is reflected through the mirror line Find the

coordinates of the point image . (4 marks)

1. Two doctors are chosen randomly one at ago without replacement from

a medical staff consisting of 2 women and 3 men to attend an HIV/AIDS

workshop. Calculate the probability that the two doctors chosen are:

1. of the same sex (2 marks)
2. of opposite sex (2 marks)

1. Solve for in (4 marks)
2. Determine the value of for which the matrix below has no inverse.

(4 marks)

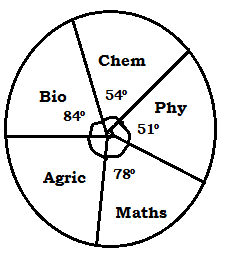
1. Given that

Find (i) (2 marks)

(ii) (2 marks)

1. If for find the value of; (4 marks)
2. The total marks scored by a student in five subjects was 240.

The pie – chart below represents the marks scored in each subjects.



What was the score in Agriculture? (4 marks)

**SECTION B (60 MARKS)**

**Attempt any five questions from this section.**

1. The table below shows the masses to the nearest kg of 80 animals on a certain farm.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mass (Kg) | 1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 |
| No. of animals | 5 | 13 | 32 | 27 | 3 |

1. State the modal class
2. Calculate the mean mass of the animals.
3. Draw a histogram to represent the above data and use it to find the modal

mass (12 marks)

1. (a) Given that and .

Determine matrix . (4 marks)

(b) Find the inverse of Hence or otherwise.

Solve the equations; and . (4 marks)

(c) Opio bought 5 Biology books and 6 Chemistry books for a total of

shs. 2440. Magambo bought 7 Biology books and 9 Chemistry

books for a total of shs. 3560.

1. Form a matrix equation to represent the above information.
2. Use matrix method to find the price of one Biology book.

(4 marks)

1. Four towns and are such that is directly to the north of

and is on a bearing of from at a distance of . S is on a

bearing of from and at a distance of .

1. Using a scale of to represent make an accurate scale drawing

to show the relative position of the towns. (7 marks)

1. Find;
2. The distance and bearing of from
3. The distance and bearing of from .
4. The bearing of from

(5 marks)

1. (a) Use the graphical method to solve the simultaneous equations,

and for . (12 marks)

(b) Find also the roots of the equation from the graph

1. (a) Factorise: . Hence, find the exact value of (4 marks)

(b) If and without using tables

or calculator evaluate , give your answer in standard form. (4 marks)

1. Kamoga spent of his net salary on school fees. He also spent of the remainder on rent. He then spent of what was left on transport.

If finally he had shs. 4200. What was his net salary? (4 marks)

1. The coordinates of the vertices of rectangle are

and

1. (i) Find the coordinates of the vertices of its image, under the

transformation defined by the matrix.

(ii) Draw the object and its image on the graph paper provided.

(iii) On the same graph, draw the image, of under the

transformation given by

1. Find a single matrix which would map onto

(12 marks)

1. Nyakana makes two types of shoes and . He takes to make one

shoe of type and to make one shoe of type. He works for a maximum

of to make pairs of type and pairs of type .

It costs him to make a pair of type and to make a pair of type .

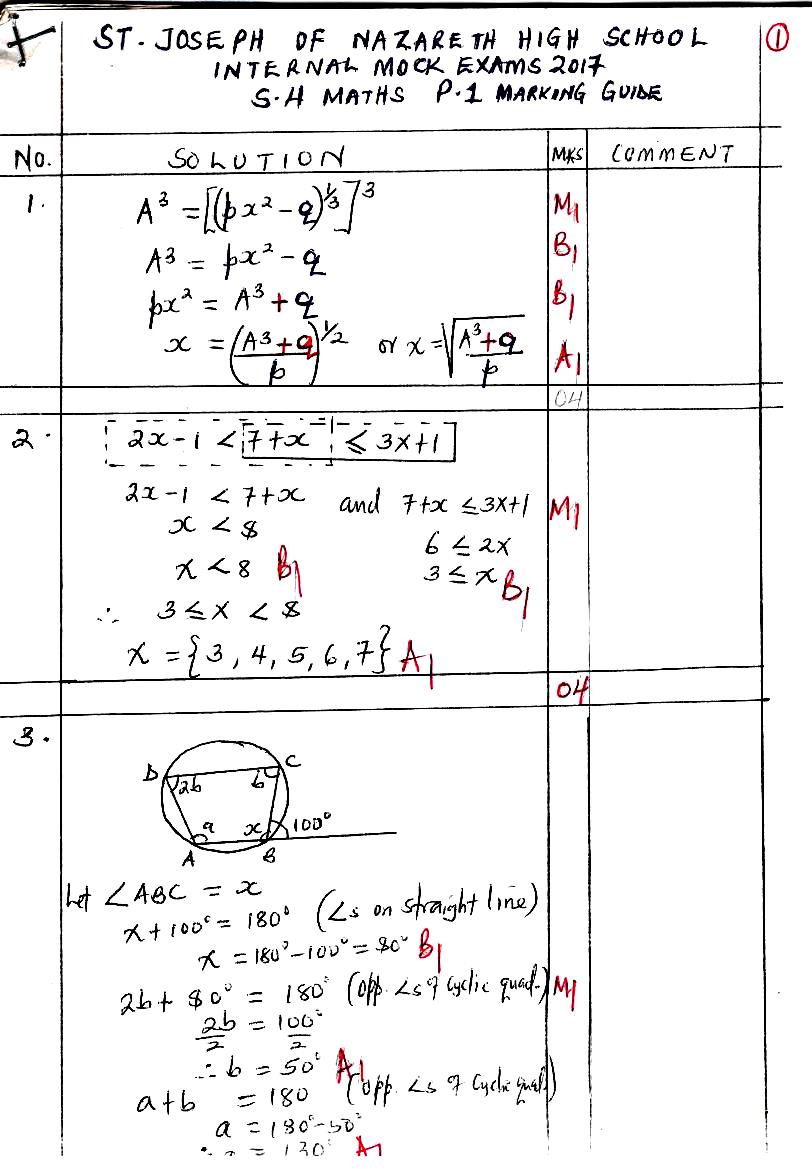
His total cost does not exceed . He must make at least of type and more than of type .

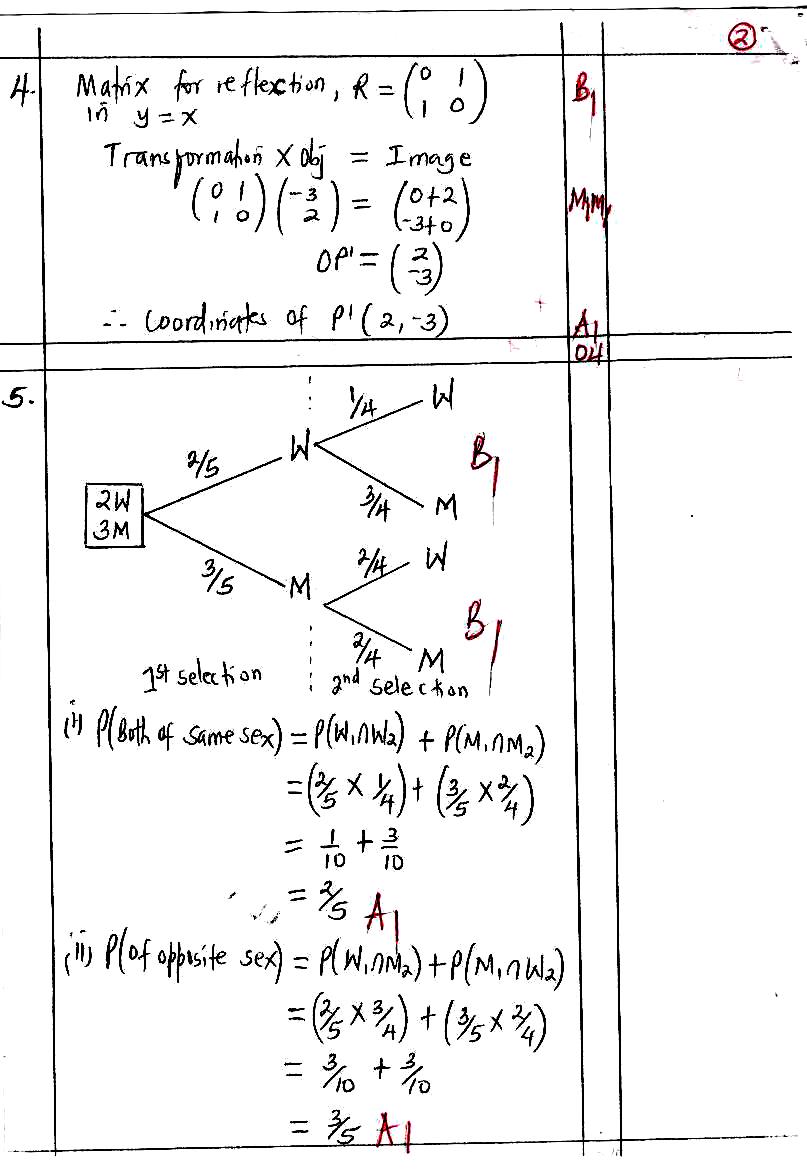
1. Write down four inequalities representing the given information.
2. On a graph paper, draw the inequalities and shade the unwanted regions.
3. Nyakana makes a profit of on each pair of type and on each

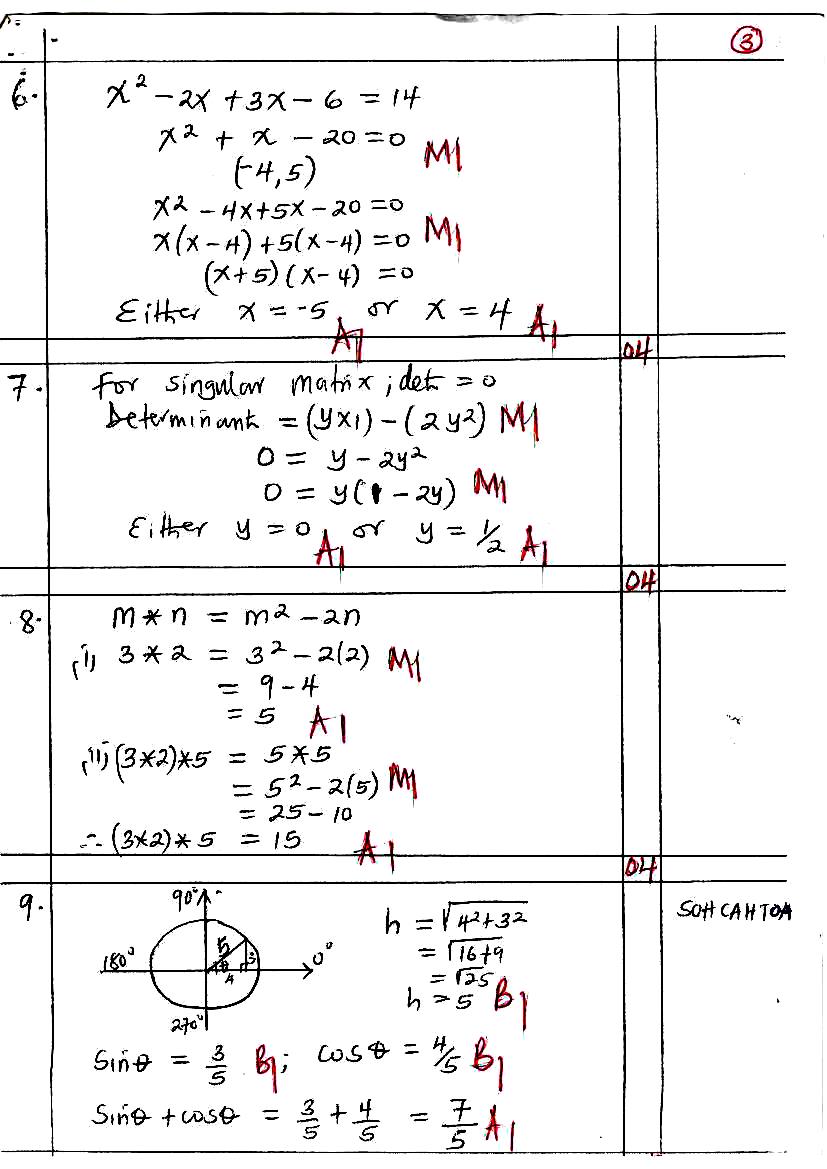
pair of type shoes.

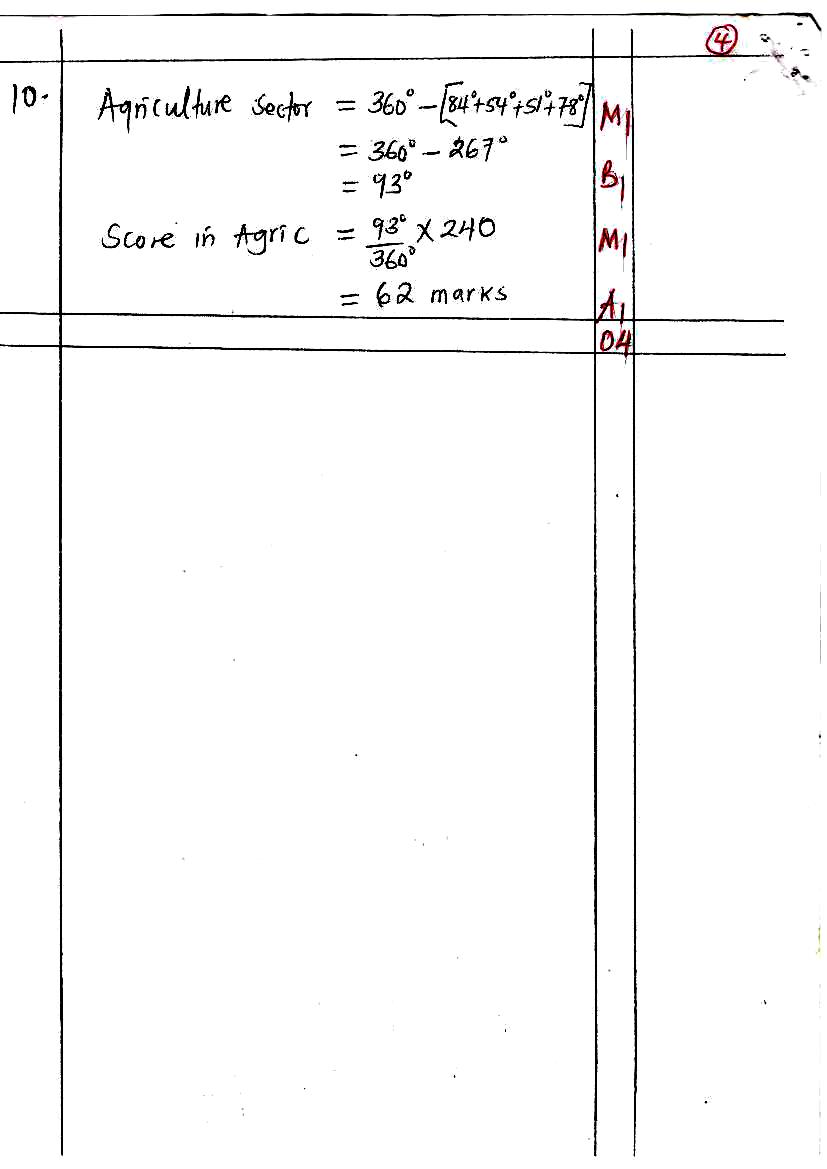
Use your graph to determine the maximum possible profit he makes. (12 marks)

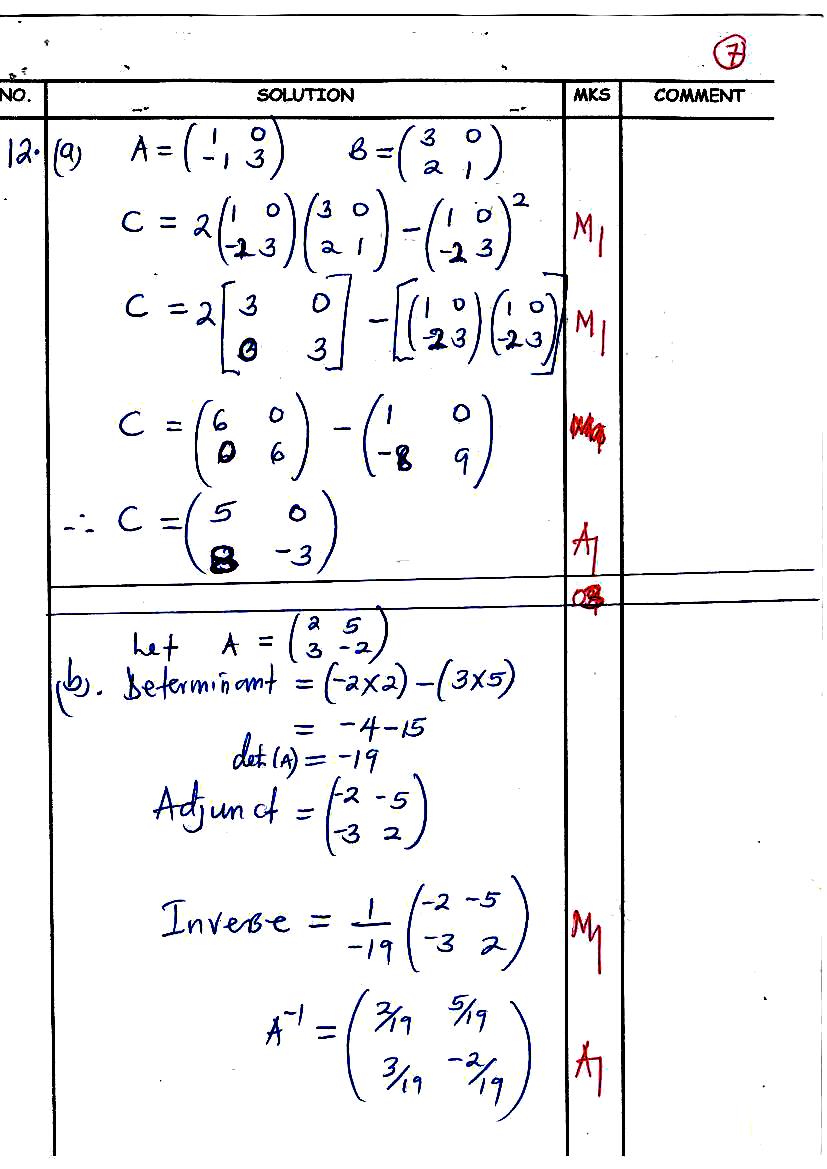
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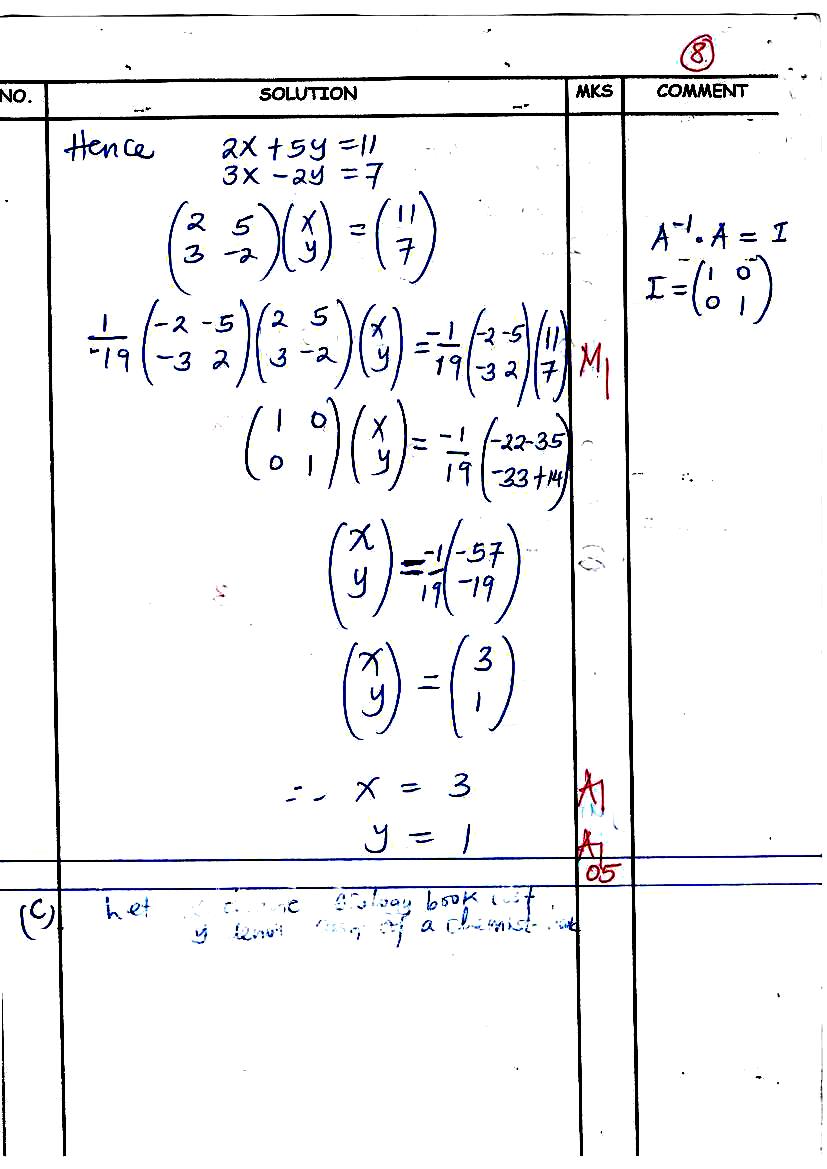
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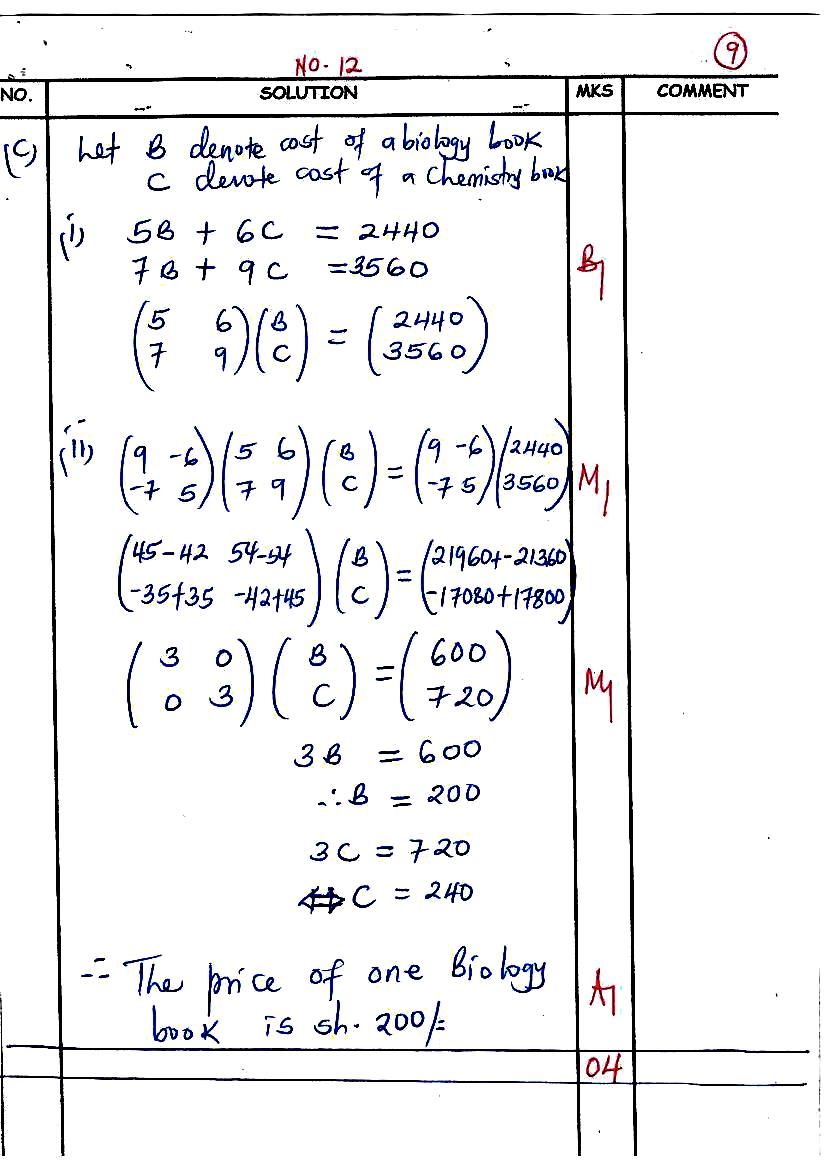
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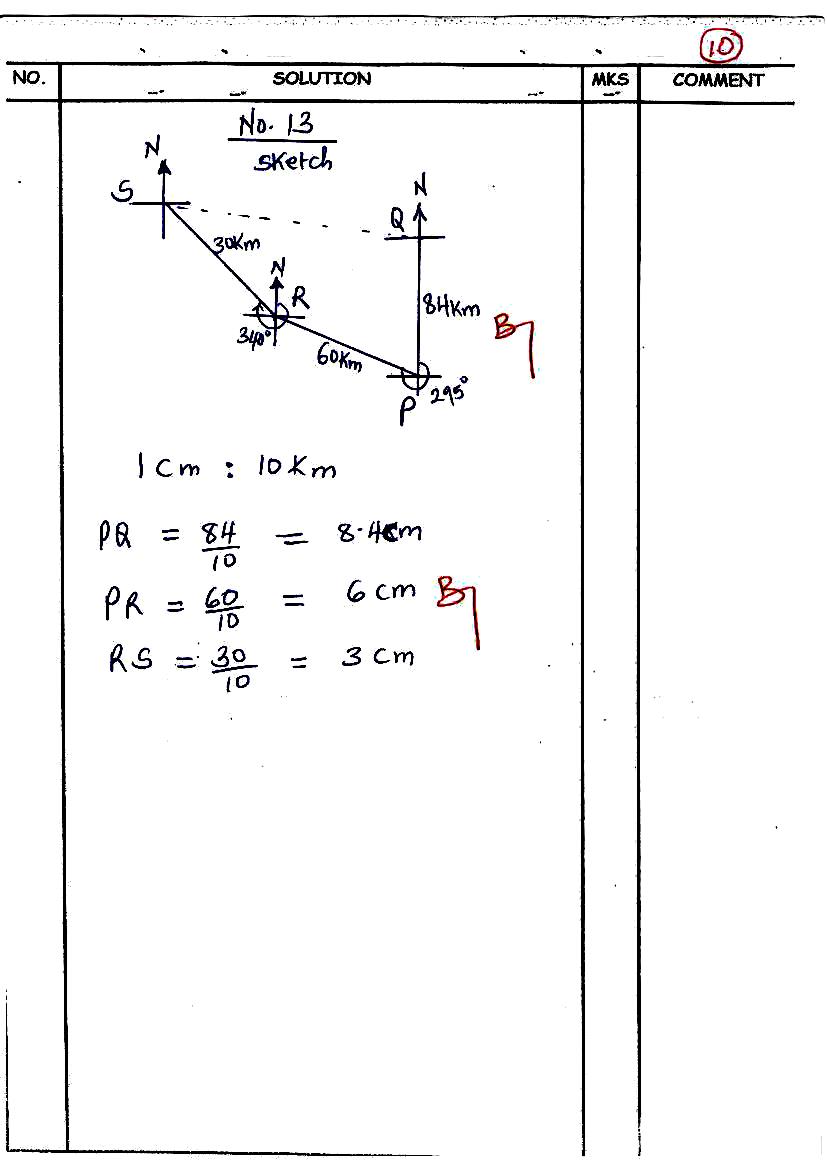
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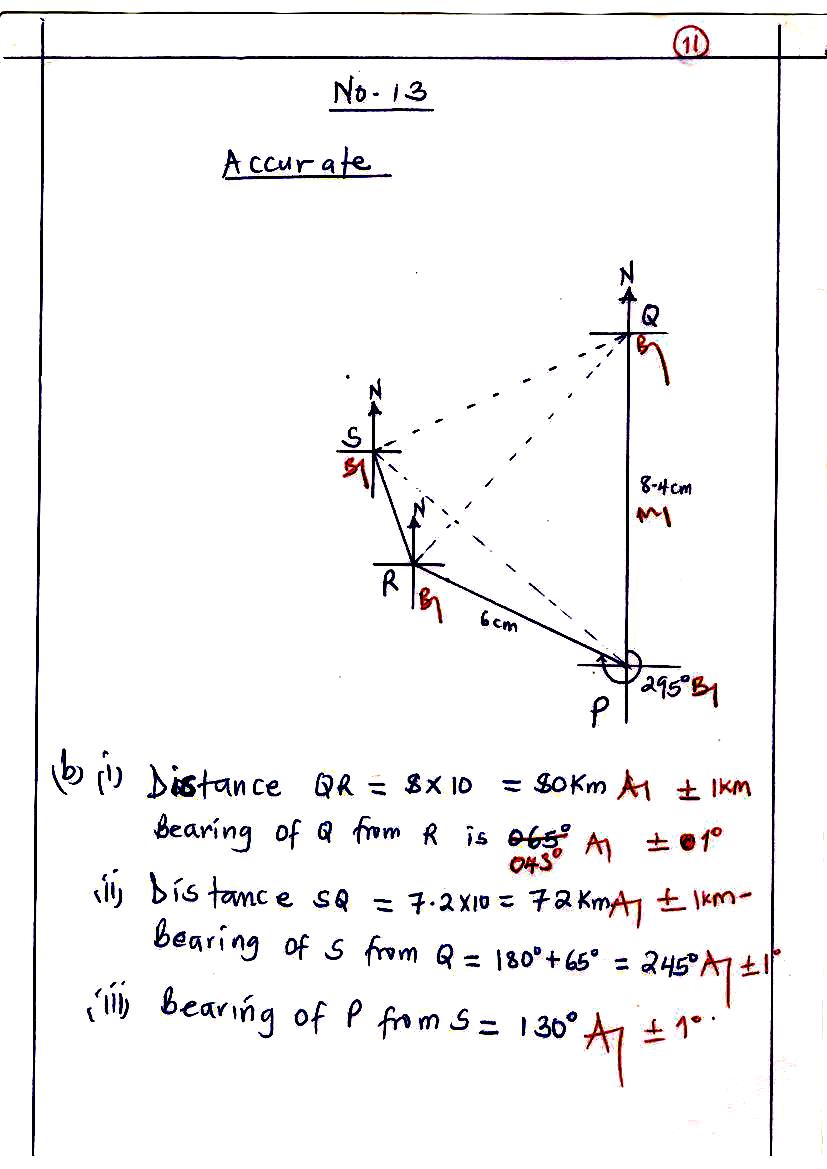
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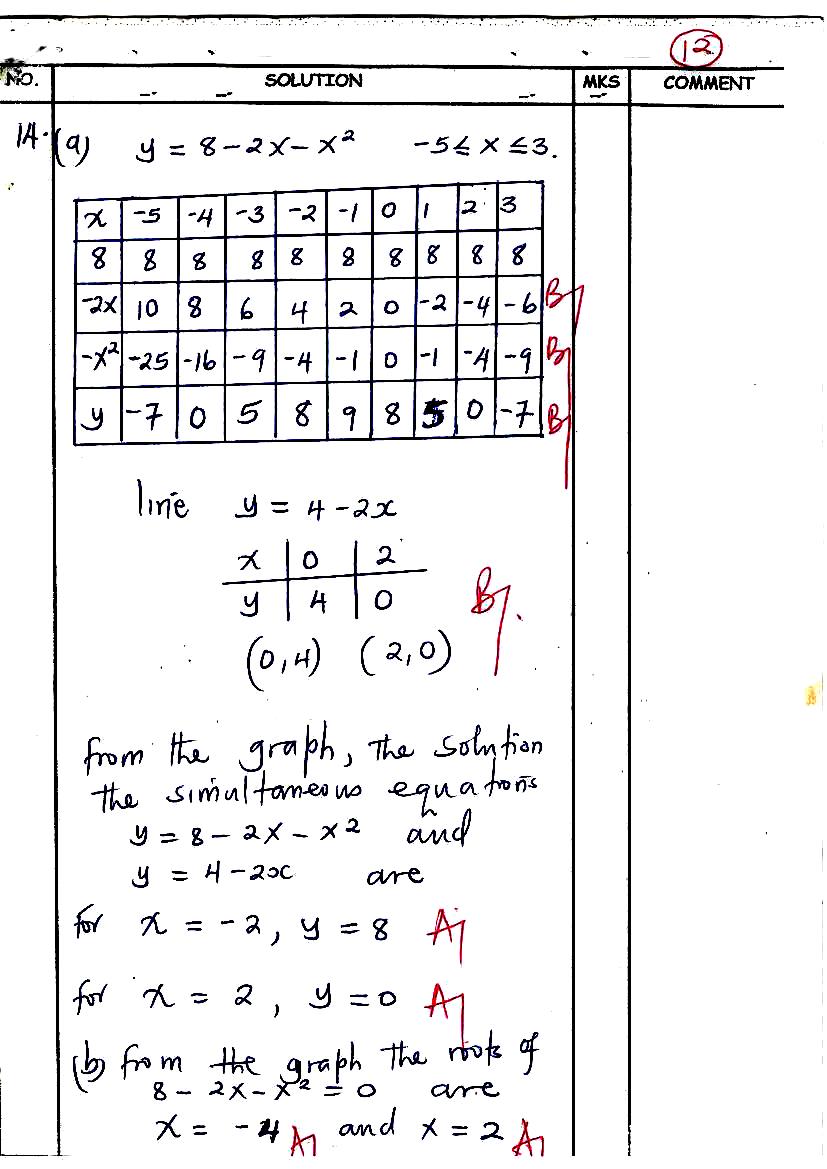
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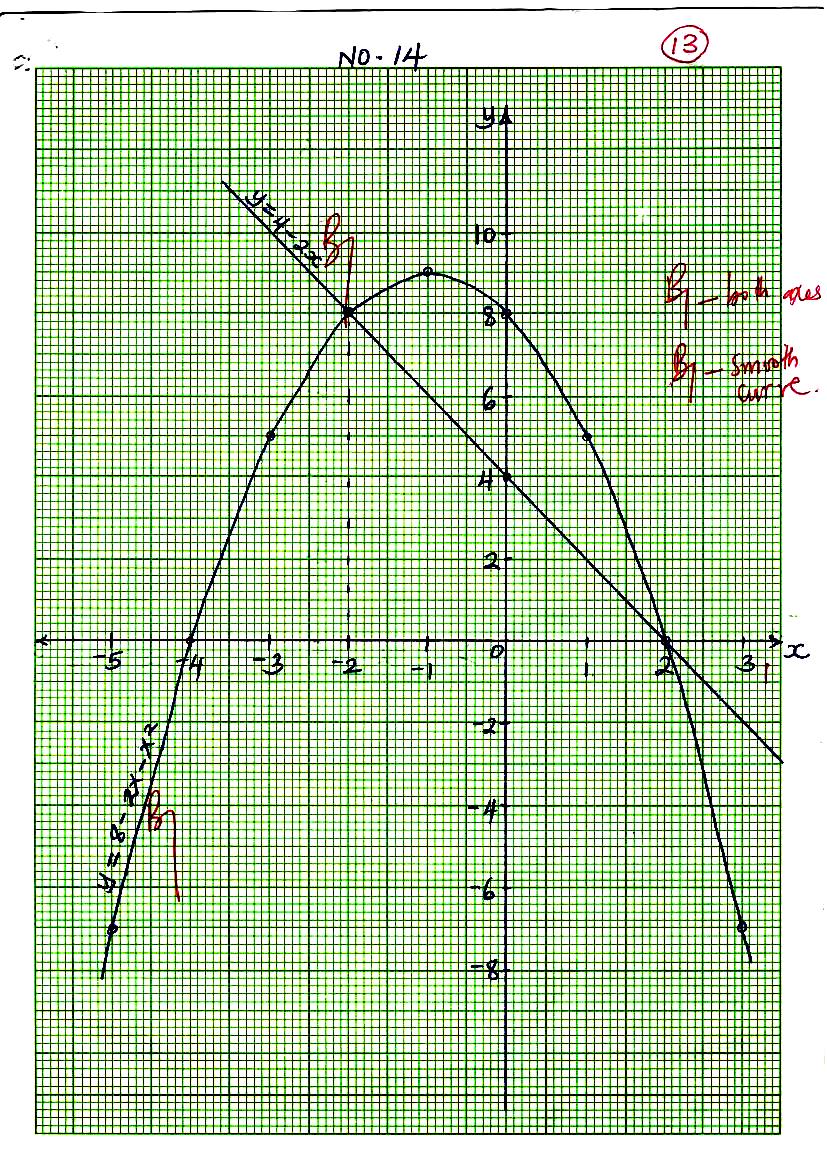
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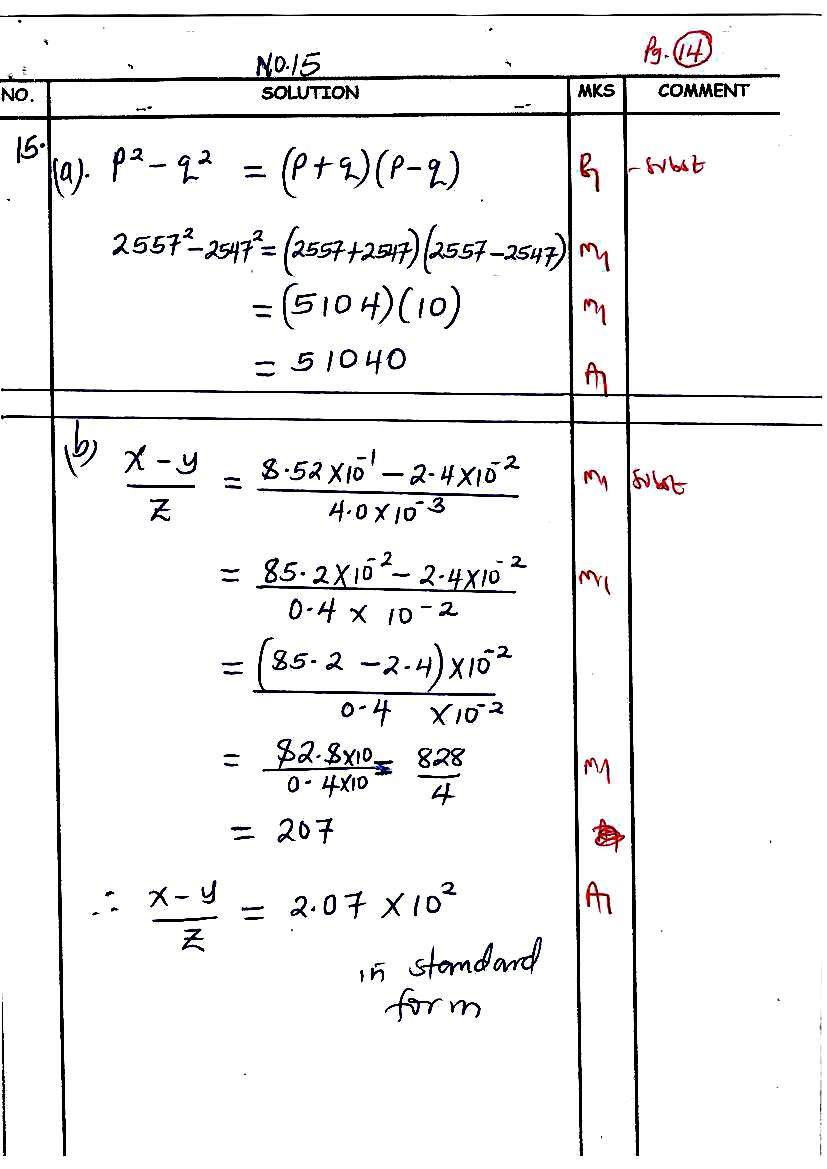
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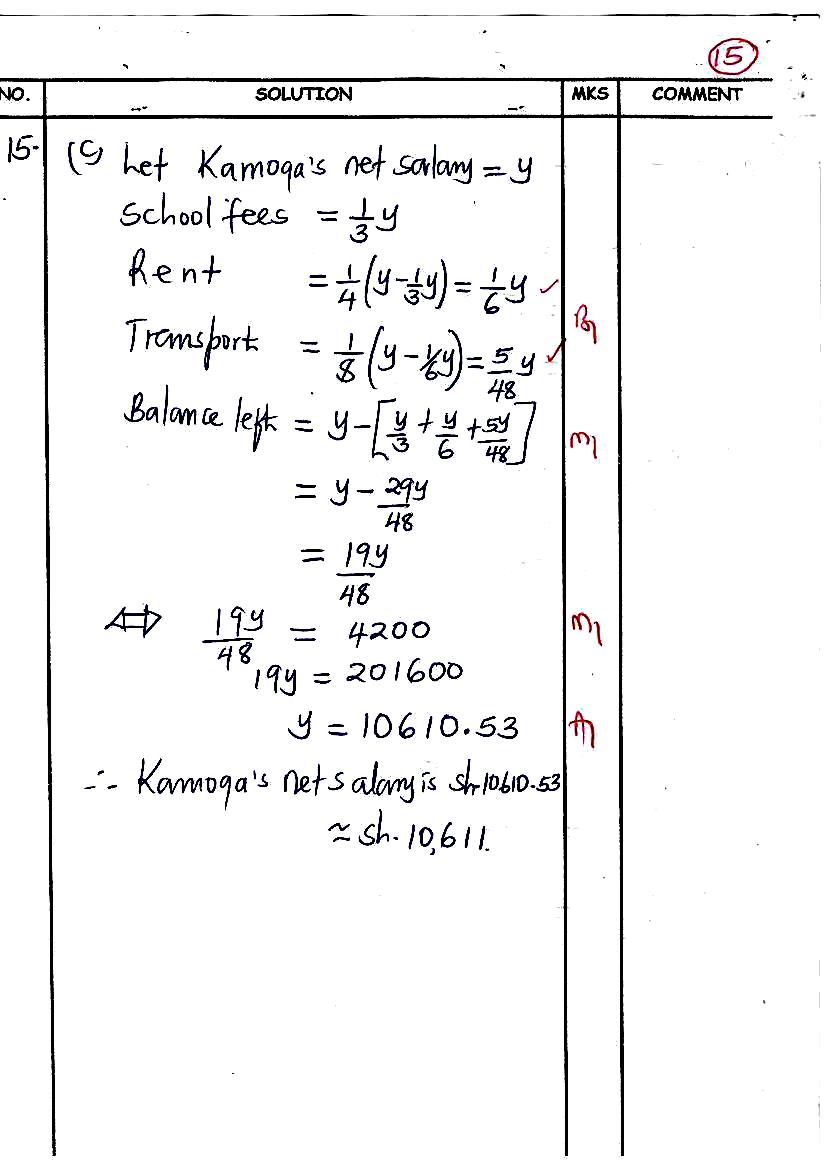
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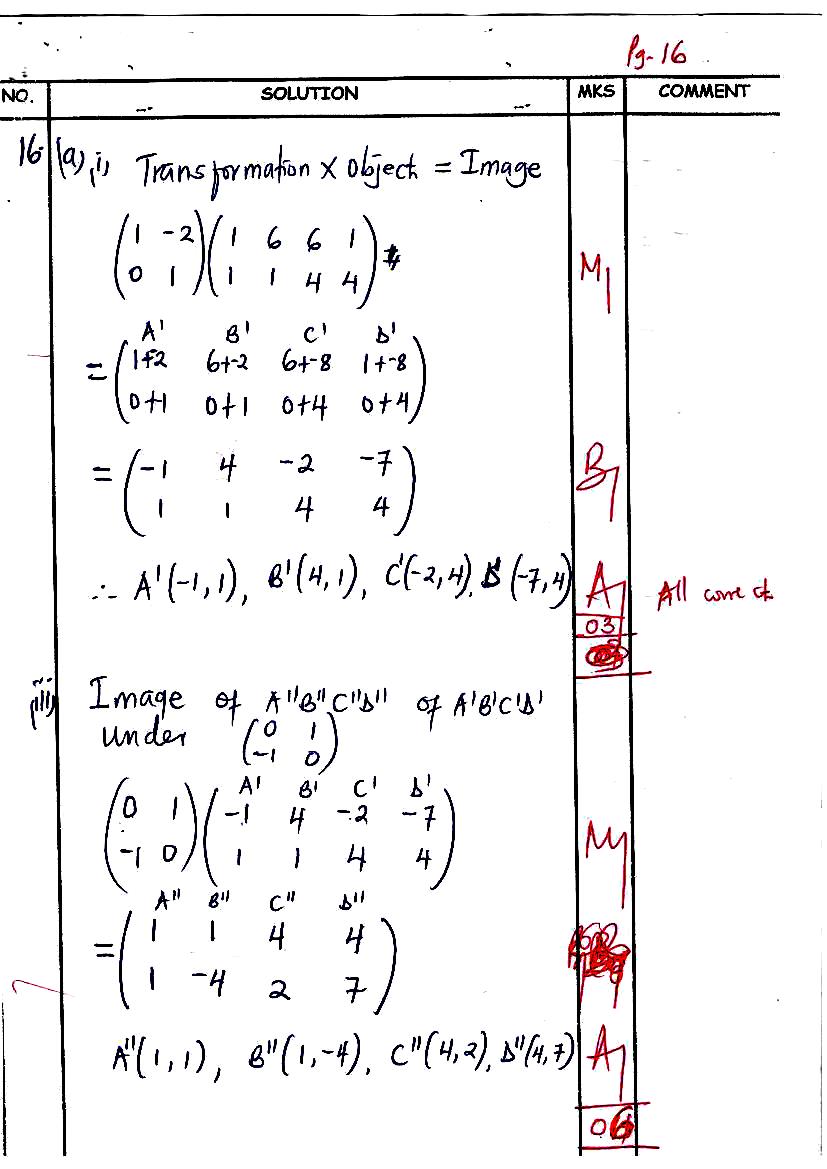
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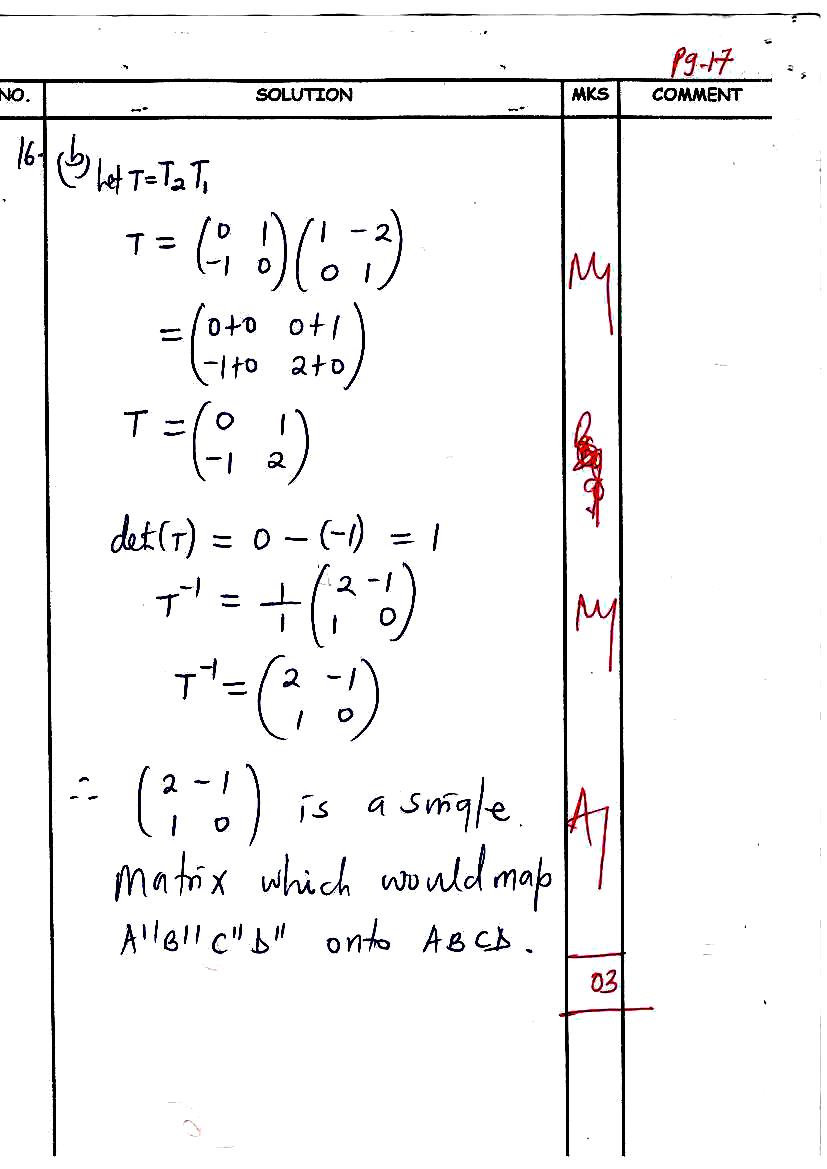
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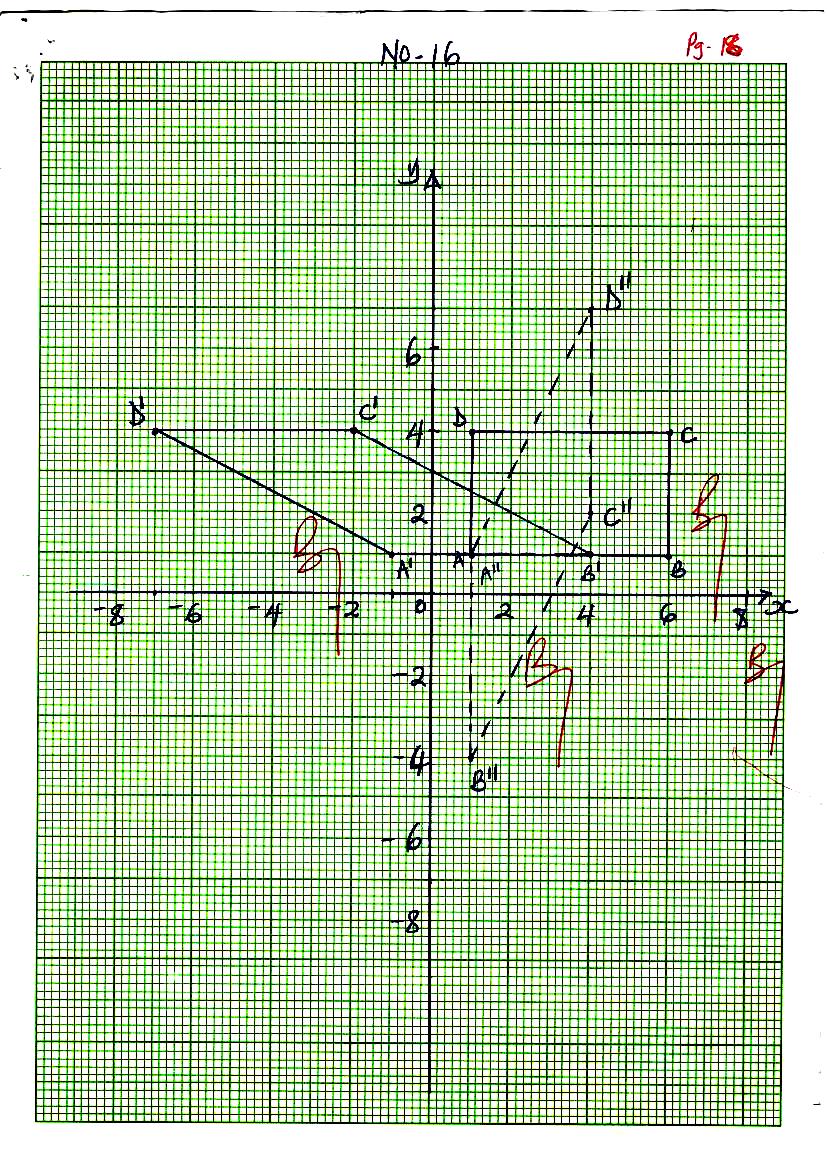
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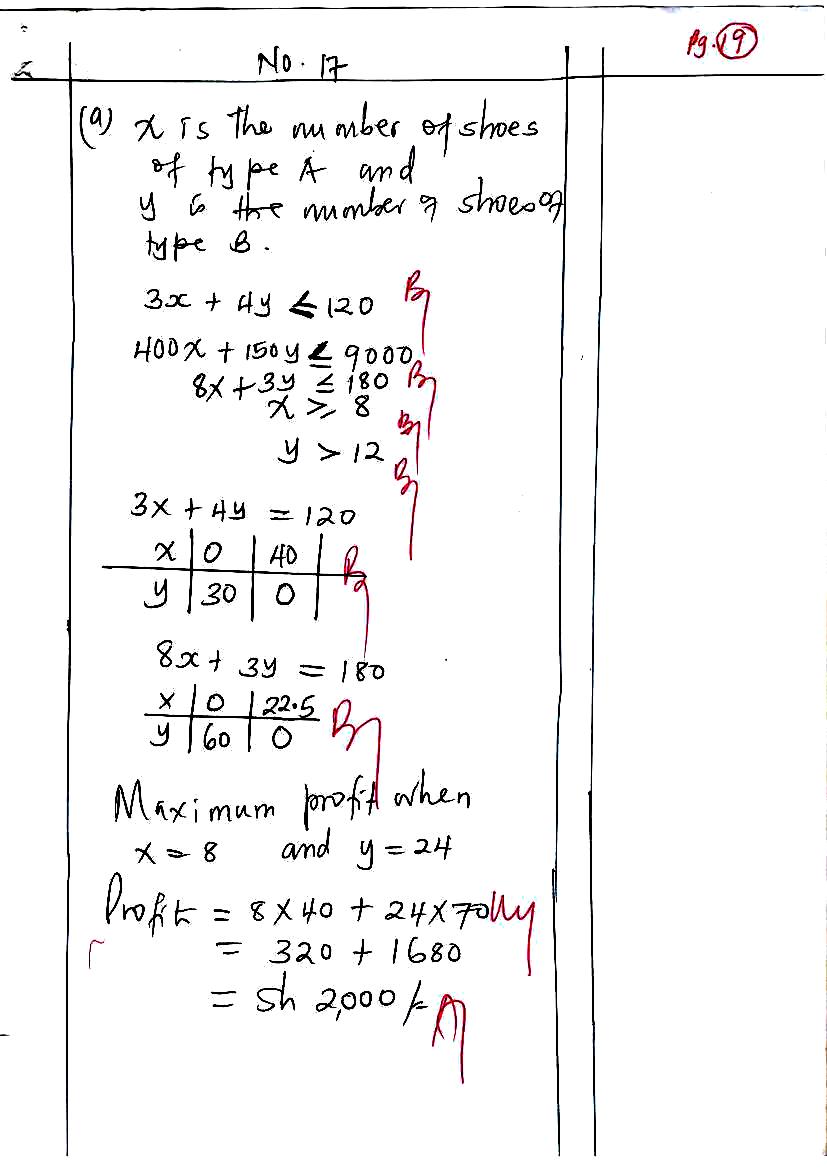
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