

UJIAN BULANAN
TINGKATAN LIMA

ADDITIONAL MATHEMATICS

**DO NOT OPEN
THIS QUESTION PAPER
UNTIL INSTRUCTED TO DO SO**

1. *This question paper consists of 10 questions.*
2. *Answer all questions.*
3. *Write your answers clearly in the spaces provided in the question paper.*
4. *Show your working. It may help you to get marks.*
5. *The diagrams in the questions provided are not drawn to scale unless stated.*
6. *A list of formulae is provided on page 2 .*
7. *You may use a non-programmable scientific calculator.*

For examiner's use only		
Question	Total Marks	Marks Obtained
1	3	
2	4	
3	4	
4	3	
5	2	
6	4	
7	2	
8	4	
9	4	
10	10	
TOTAL	40	

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used.

ALGEBRA

$$1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$2 \quad a^m \times a^n = a^{m+n}$$

$$3 \quad a^m \div a^n = a^{m-n}$$

$$4 \quad (a^m)^n = a^{nm}$$

$$5 \quad \log_a mn = \log_a m + \log_a n$$

$$6 \quad \log_a \frac{m}{n} = \log_a m - \log_a n$$

$$7 \quad \log_a m^n = n \log_a m$$

$$8 \quad \log_a b = \frac{\log_c b}{\log_c a}$$

$$9 \quad T_n = a + (n-1)d$$

$$10 \quad S_n = \frac{n}{2}[2a + (n-1)d]$$

$$11 \quad T_n = ar^{n-1}$$

$$12 \quad S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, \quad (r \neq 1)$$

$$13 \quad S_\infty = \frac{a}{1 - r}, \quad |r| < 1$$

1. Given that the geometric progression $-8, 6, -\frac{9}{2}, \dots$, find the sum to infinity of the progression.

Diberi bahawa jangjang geometri $-8, 6, -\frac{9}{2}, \dots$, cari hasil tambah ketakterhinggaan jangjang tersebut.

[3 marks]

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2. The first three terms of a geometric progression are $x, 12, 36$. Find
Tiga sebutan pertama bagi satu jangjang geometri adalah $x, 12, 36$. Cari

- a) the value of x , / *nilai x ,*
b) the sum of the third term to the tenth term / *hasil tambah dari sebutan ketiga ke sebutan kesepuluh*

[4 marks]

3. The tenth term and the fifteenth term of an arithmetic progression are 24 and 41 respectively. Find
Sebutan kesepuluh dan kelima belas bagi satu jangjang arithmetik adalah masing-masing 24 dan 41. Cari
- a) the common different / *beza sepunya*
 - b) the first term / *sebutan pertama*

[4 marks]

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4. Given that the first three terms of an arithmetic progression are $6q, 6q + 5$ and $9q + 2$. Find the value of q
Diberi bahawa tiga sebutan pertama satu jangjang arithmetik adalah $6q, 6q + 5$ dan $9q + 2$. Cari nilai bagi q

[3 marks]

5. Find the number of terms in the arithmetics progression 36, 31, 26, ... , -34
Cari bilangan sebutan dalam jangjang arithmetik 36, 31, 26, ... , -34

[2 marks]

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6. The sum of the first n terms of an arithmetic progression is given by $S_n = n^2 - 6n$. Find
Hasiltambah bagi n sebutan pertama satu jangjang arithmetik diberi oleh $S_n = n^2 - 6n$. Cari
a) the fifth term / *sebutan kelima*
b) the common different / *beza sepunya*

[4 marks]

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7. Express 1.121212... as a fraction in its simplest form
Ungkapkan 1.121212... sebagai satu pecahan dalam sebutan teringkas

[2 marks]

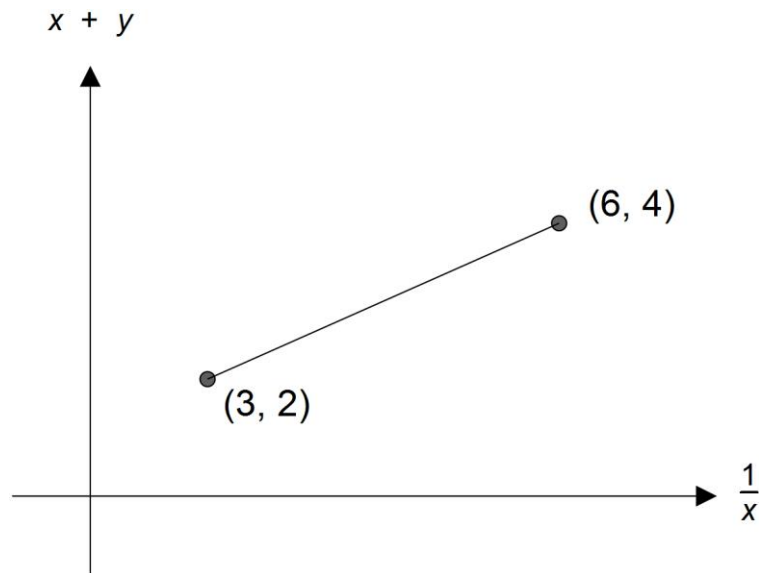


Diagram 1 / Rajah 1

8. Diagram 1 shows a straight line obtained by plotting a graph of $(x + y)$ against $\frac{1}{x}$. Express y in terms of x .

Rajah 1 menunjukkan satu garis lurus yang diperoleh dengan memplot satu graf $(x + y)$ melawan $\frac{1}{x}$.

Ungkapkan y dalam sebutan x .

[4 marks]

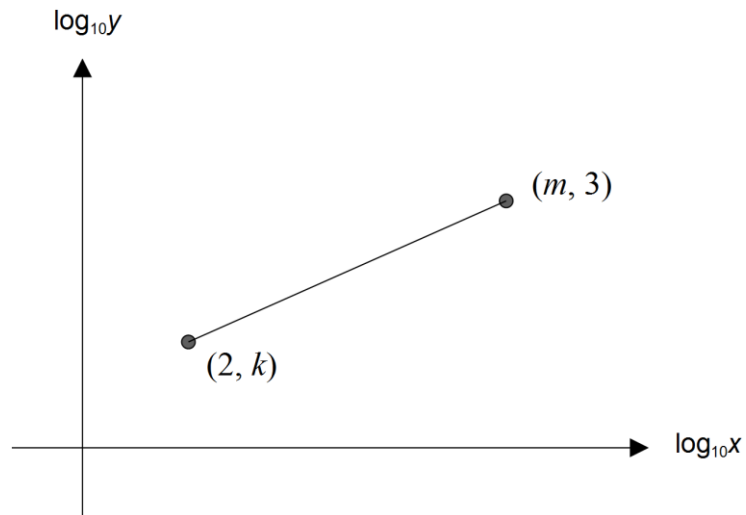


Diagram 2 / Rajah 2

9. Diagram 2 shows a straight line graph obtained by plotting $\log_{10} y$ against $\log_{10} x$. x and y are related by the equation $y = \frac{x^2}{100}$. Calculate the values of k and of m .

Rajah 2 menunjukkan satu graf garis lurus diperolehi dengan memplotkan $\log_{10} y$ melawan $\log_{10} x$.

x dan y dihubungkan oleh persamaan $y = \frac{x^2}{100}$. Hitungkan nilai-nilai k dan m

[4 marks]

10.

x	2	3	4	5	6	7
y	6.27	8.78	12.29	17.21	24.09	33.73

Table 1 / Jadual 1

Table 1 shows the values of two variables, x and y , obtained from an experiment. It is known that the variables x and y are related by the equation $y = pq^x$ where p and q are constants.

Jadual 1 menunjukkan nilai-nilai bagi dua pembolehubah, x dan y , yang diperolehi dari satu eksperimen. Diketahui bahawa nilai-nilai x dan y dihubungkan oleh persamaan $y = pq^x$ di mana p dan q adalah pemalar.

- a) By using the scale of 2cm to 1 unit on the x -axis and 2cm to 0.2 unit on the y -axis, plot $\log_{10} y$ against x . Hence, draw the line of best fit.

Dengan menggunakan skala 2cm kepada 1 unit pada paksi- x dan 2cm kepada 0.2 unit pada paksi- y , plot graf $\log_{10} y$ melawan x . Selanjutnya, lukis garis penyuaian terbaik.

- b) From the graph, find

Dari graf, cari

- the value of p and the value of q / nilai p dan nilai q
- the value of y when $x = 4.3$ / nilai y bila $x = 4.3$

[10 marks]