

3472/1
Matematik Tambahan
Kertas 1
Sept 2008
2 Jam

Name :

Form :

SEKOLAH MENENGAH ZON A KUCHING
 LEMBAGA PEPERIKSAAN
 PEPERIKSAAN PERCUBAAN SPM 2008

MATEMATIK TAMBAHAN

Kertas 1

Dua jam

**JANGAN BUKA KERTAS SOALAN INI
 SEHINGGA DIBERITAHU**

1. *This question paper consists of 25 questions.*
2. *Answer all questions.*
3. *Give only one answer for each question.*
4. *Write your answers clearly in the spaces provided in the question paper.*
5. *Show your working. It may help you to get marks.*
6. *If you wish to change your answer, cross out the work that you have done. Then write down the new answer.*
7. *The diagrams in the questions provided are not drawn to scale unless stated.*
8. *The marks allocated for each question and sub-part of a question are shown in brackets.*
9. *A list of formulae is provided on pages 2 to 3.*
10. *A booklet of four-figure mathematical tables is provided.*
11. *You may use a non-programmable scientific calculator.*
12. *This question paper must be handed in at the end of the examination.*

For examiner's use only		
Question	Total Marks	Marks Obtained
1	2	
2	3	
3	3	
4	3	
5	3	
6	3	
7	3	
8	3	
9	3	
10	4	
11	3	
12	4	
13	3	
14	3	
15	3	
16	4	
17	3	
18	3	
19	4	
20	4	
21	4	
22	3	
23	3	
24	3	
25	3	
TOTAL	80	

Kertas soalan ini mengandungi 15 halaman bercetak

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

ALGEBRA

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS

$$1 \quad y = uv, \quad \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$2 \quad y = \frac{u}{v}, \quad \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2},$$

$$3 \quad \frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$$

4 Area under a curve

$$= \int_a^b y \, dx \text{ or}$$

$$= \int_a^b x \, dy$$

5 Volume generated

$$= \int_a^b \pi y^2 \, dx \text{ or}$$

$$= \int_a^b \pi x^2 \, dy$$

GEOMETRY

$$1 \quad \text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

2 Midpoint

$$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$3 \quad |r| = \sqrt{x^2 + y^2}$$

$$4 \quad \hat{r} = \frac{x\hat{i} + y\hat{j}}{\sqrt{x^2 + y^2}}$$

5 A point dividing a segment of a line

$$(x, y) = \left(\frac{nx_1 + mx_2}{m+n}, \frac{ny_1 + my_2}{m+n} \right)$$

6. Area of triangle =

$$\frac{1}{2} |(x_1y_2 + x_2y_3 + x_3y_1) - (x_2y_1 + x_3y_2 + x_1y_3)|$$

STATISTICS

$$1 \quad \bar{x} = \frac{\sum x}{N}$$

$$2 \quad \bar{x} = \frac{\sum fx}{\sum f}$$

$$3 \quad \sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}} = \sqrt{\frac{\sum x^2}{N} - \bar{x}^2}$$

$$4 \quad \sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2}$$

$$5 \quad m = L + \left[\frac{\frac{1}{2}N - F}{f_m} \right] C$$

$$6 \quad I = \frac{P_1}{P_0} \times 100$$

$$7 \quad \bar{I} = \frac{\sum w_i I_i}{\sum w_i}$$

$$8 \quad {}^n P_r = \frac{n!}{(n-r)!}$$

$$9 \quad {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$10 \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$11 \quad P(X=r) = {}^n C_r p^r q^{n-r}, p+q=1$$

$$12 \quad \text{Mean, } \mu = np$$

$$13 \quad \sigma = \sqrt{npq}$$

$$14 \quad z = \frac{x - \mu}{\sigma}$$

TRIGONOMETRY

$$1 \quad \text{Arc length, } s = r\theta$$

$$2 \quad \text{Area of sector, } A = \frac{1}{2} r^2 \theta$$

$$3 \quad \sin^2 A + \cos^2 A = 1$$

$$4 \quad \sec^2 A = 1 + \tan^2 A$$

$$5 \quad \text{cosec}^2 A = 1 + \cot^2 A$$

$$6 \quad \sin 2A = 2 \sin A \cos A$$

$$7 \quad \begin{aligned} \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \end{aligned}$$

$$8 \quad \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$9 \quad \sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$10 \quad \cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$11 \quad \tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

$$12 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$13 \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$14 \quad \text{Area of triangle} = \frac{1}{2} ab \sin C$$

Answer **all** questions.

1 Diagram 1 shows the linear function f .

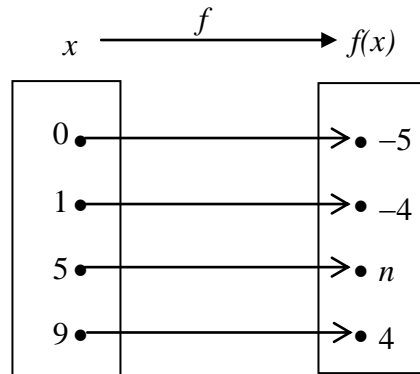


DIAGRAM 1

(a) State the value of n .

(b) Using the function notation, express f in terms of x .

[2 marks]

Answer : (a)

(b)

1

2

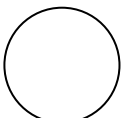
2. Two functions are defined by $f : x \rightarrow x - 1$ and $g : x \rightarrow x^2 + 3x + 1$. Given that $gf : x \rightarrow x^2 + ax + b$, find the value of a and of b .

[3 marks]

Answer :

2

3



*For
examiner's
use only*

3 The function of p is defined as $p(x) = \frac{x-3}{1-2x}, x \neq h$.

Find

(a) the value of h ,

(b) $p^{-1}(x)$.

[3 marks]

Answer : (a)

(b)

3

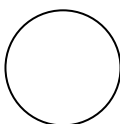


4 Find the range of values of t if the following quadratic equation has no roots
 $(t + 2)x^2 + 6x + 3 = 0$.

[3 marks]

Answer :

4



- 5 Given that α and β are the roots of the quadratic equation $2x^2 + 3x = -7$.
Form the quadratic equation whose roots are 2α and 2β .

[3 marks]

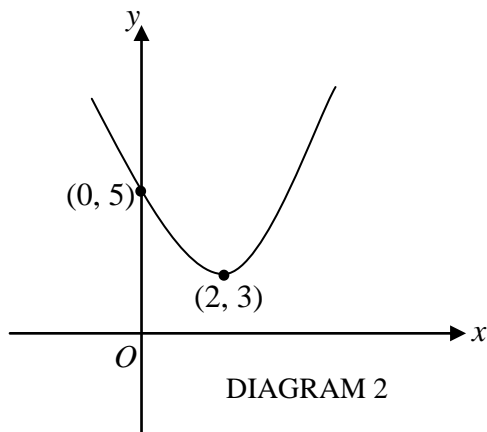
Answer :

5

3

- 6 Diagram 2 shows the graph of a curve $y = a(x + p)^2 + q$ that passes through the point $(0, 5)$ and has the minimum point $(2, 3)$. Find the values of a , p and q .

[3 marks]



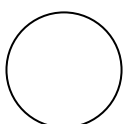
Answer : $p =$

$q =$

$a =$

6

3



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examiner's
use only

7 Find the range of values of x for which $x(x - 2) \leq 15$.

[3 marks]

Answer :

7

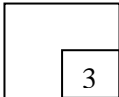


8 Solve $\frac{3^{x-1}}{9^x} = 27$

[3 marks]

Answer :

8

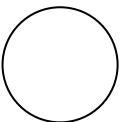


9 Given that $\lg 2 = 0.3$ and $\lg 17 = 1.23$, find, without using scientific calculator or mathematical tables, find the value of $\log_2 34$.

[3 marks]

Answer :

9



10 The n^{th} term of an arithmetic progression is given by $T_n = 5n - 1$.
Find

- (a) the first term and the common difference,
- (b) the sum of the first 15 terms
of the progression.

[4 marks]

Answer : (a)
(b)

10

4

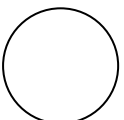
11 The first three terms of a geometric progression are $\frac{2}{19683}, \frac{2}{6561}, \frac{2}{2187}, \dots$.
Find the three consecutive terms whose product is 157464.

[3 marks]

Answer :

11

3



14 If the straight line $\frac{x}{5} - \frac{y}{p} = 1$ is perpendicular to the straight line $10x + 12y - 3 = 0$, find the value of p .

[3 marks]

Answer :

14

3

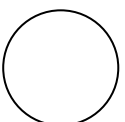
15 Given the vectors $\underline{a} = 3\underline{i} - m\underline{j}$, $\underline{b} = 8\underline{i} - \underline{j}$ and $\underline{c} = -5\underline{i} + 2\underline{j}$. If vector $\underline{a} - \underline{b}$ is parallel to vector \underline{c} , find the value of the constant m .

[3 marks]

Answer :

15

3



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16 The diagram 4 shows a parallelogram $ABCD$ drawn on a Cartesian plane.

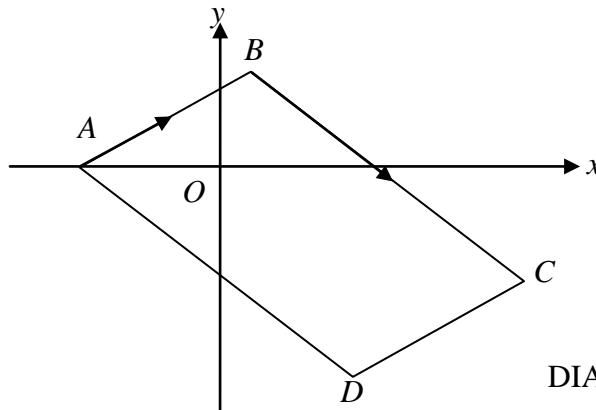


DIAGRAM 4

It is given that $\vec{AB} = 3\vec{i} + 2\vec{j}$ and $\vec{BC} = 4\vec{i} - 3\vec{j}$.

Find

(a) \vec{BD} ,

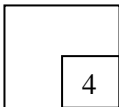
(b) $|\vec{AC}|$.

[4 marks]

Answer : (a)

(b)

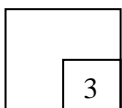
16



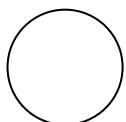
17 Solve the equation $\sin^2 \theta + 5 \cos \theta = 3 - \cos^2 \theta$ for $0^\circ \leq \theta \leq 360^\circ$.

[3 marks]

17



Answer :



18 Given that $\sin x = -\frac{3}{5}$ and $90^\circ < x < 270^\circ$, find the value of $\sec 2x$.

[3 marks]

Answer :

18

3

19 The diagram 5 shows a semicircle of centre O and radius r cm.

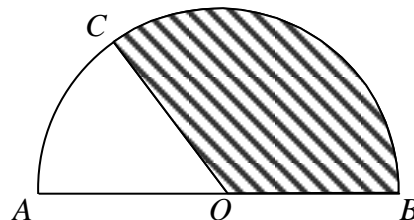


DIAGRAM 5

The length of the arc AC is 7.2 cm and the angle of COB is 2.692 radians.
Calculate

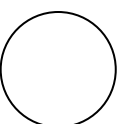
- (a) the value of r ,
- (b) the area of the shaded region.

[Use $\pi = 3.142$]

[4 marks]

Answer : (a)

(b)



For
examiner's
use only

SULIT

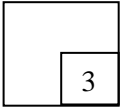
13

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20 Find the coordinates of the turning points of the curve $y = x^3 + 3x^2 - 2$.

[4 marks]

20



Answer :

21 Given that $y = 3m^2$ and $m = 2x + 3$.

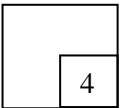
Find

(a) $\frac{dy}{dx}$ in terms of x ,

(b) the small change in y when x increases from 3 to 3.01.

[4 marks]

21



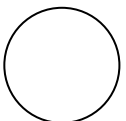
Answer : (a)

(b)

22 Find $\int \frac{3}{\sqrt{1-3x}} dx$

[3 marks]

22



Answer :

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23 Ben and Shafiq are taking driving test. The probability that Ben and Shafiq pass the test are $\frac{1}{5}$ and $\frac{2}{3}$ respectively.

Calculate the probability that at least one person passes the test.

[3 marks]

Answer :

23

23
3

24 A committee of 5 members is to be selected from 6 boys and 4 girls. Find the number of ways in which this can be done if

- (a) the committee has no girls,
- (b) the committee has exactly 3 boys.

[3 marks]

Answer : (a)

(b)

24

24
3

For
examiner's
use only

SULIT

15

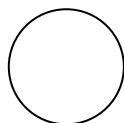
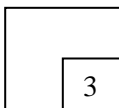
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25

A random variable X has a normal distribution with mean 50 and variance σ^2 .
Given that $P[X > 51] = 0.288$, find the value of σ .

[3 marks]

25



Answer :

END OF QUESTION PAPER

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SULIT

**SEKOLAH-SEKOLAH ZON A KUCHING
LEMBAGA PEPERIKSAAN SEKOLAH ZON A**

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2008**

MATEMATIK TAMBAHAN

Kertas 2

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *This question paper consists of three sections : Section A, Section B and Section C.*
2. *Answer all question in Section A , four questions from Section B and two questions from Section C.*
3. *Give only one answer / solution to each question..*
4. *Show your working. It may help you to get marks.*
5. *The diagram in the questions provided are not drawn to scale unless stated.*
6. *The marks allocated for each question and sub-part of a question are shown in brackets..*
7. *A list of formulae is provided on pages 2 to 3.*
8. *A booklet of four-figure mathematical tables is provided.*
9. *You may use a non-programmable scientific calculator.*

Kertas soalan ini mengandungi **11** halaman bercetak

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

ALGEBRA

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS

$$1 \quad y = uv, \quad \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$2 \quad y = \frac{u}{v}, \quad \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2},$$

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$$= \int_a^b y \, dx \text{ or}$$

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5 A point dividing a segment of a line

$$(x, y) = \left(\frac{nx_1 + mx_2}{m+n}, \frac{ny_1 + my_2}{m+n} \right)$$

6. Area of triangle =

$$\frac{1}{2} |(x_1y_2 + x_2y_3 + x_3y_1) - (x_2y_1 + x_3y_2 + x_1y_3)|$$

STATISTICS

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$$4 \quad \sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2}$$

$$5 \quad m = L + \left[\frac{\frac{1}{2}N - F}{f_m} \right] C$$

$$6 \quad I = \frac{P_1}{P_0} \times 100$$

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$$8 \quad {}^n P_r = \frac{n!}{(n-r)!}$$

$$9 \quad {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$10 \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$11 \quad P(X=r) = {}^n C_r p^r q^{n-r}, p + q = 1$$

$$12 \quad \text{Mean, } \mu = np$$

$$13 \quad \sigma = \sqrt{npq}$$

$$14 \quad z = \frac{x - \mu}{\sigma}$$

TRIGONOMETRY

$$1 \quad \text{Arc length, } s = r\theta$$

$$2 \quad \text{Area of sector, } A = \frac{1}{2} r^2 \theta$$

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$$12 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$13 \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$14 \quad \text{Area of triangle} = \frac{1}{2} ab \sin C$$

SECTION A

[40 marks]

Answer all questions in this section.

- 1 Solve the simultaneous equations $p + m = 1$ and $p^2 + 2m^2 + pm = 8$.
Give your answers correct to three decimal places.

[5 marks]

- 2 (a) Given that the surface area, $S \text{ cm}^2$, of a sphere with radius r is $4\pi r^2$. Find $\frac{dS}{dr}$.

Hence, determine the rate of increase of the surface area of the sphere if the radius is increasing at the rate of 0.2 cm s^{-1} when $r = 3$.

[3 marks]

- (b) Given that $y = x^2 - 3x + 2$, find the values of x if $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + 14x - 11 = y$.

[4 marks]

- 3 Table 1 shows the distribution of scores obtained by a group of students in a competition.

Score	1	2	3	4	5
Number of students	4	6	12	5	3

TABLE 1

- (a) Calculate the standard deviation of the distribution. [3 marks]

- (b) If each score of the distribution is multiplied by 2 and then subtracted by c , the mean of the new distribution of scores is 2.8, calculate

- (i) the value of c ,
(ii) the standard deviation of the new distribution of scores.

[3 marks]

- 4 Diagram 1 shows a sector AOB with centre O and a radius of 12 cm.

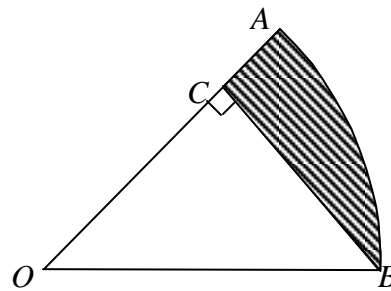


DIAGRAM 1

Point C lies on OA such that $OC : OA = 3 : 4$ and $\angle OCB = 90^\circ$.

[Use $\pi = 3.142$]

Find

- (a) the value of $\angle COB$, in radian, [2 marks]
 - (b) the perimeter of the shaded region, [3 marks]
 - (c) the area of the shaded region. [3 marks]
- 5 Diagram 2 shows a square with side of length a cm was cut into four equal squares and then every square was cut into another four equal squares for the subsequent stages.

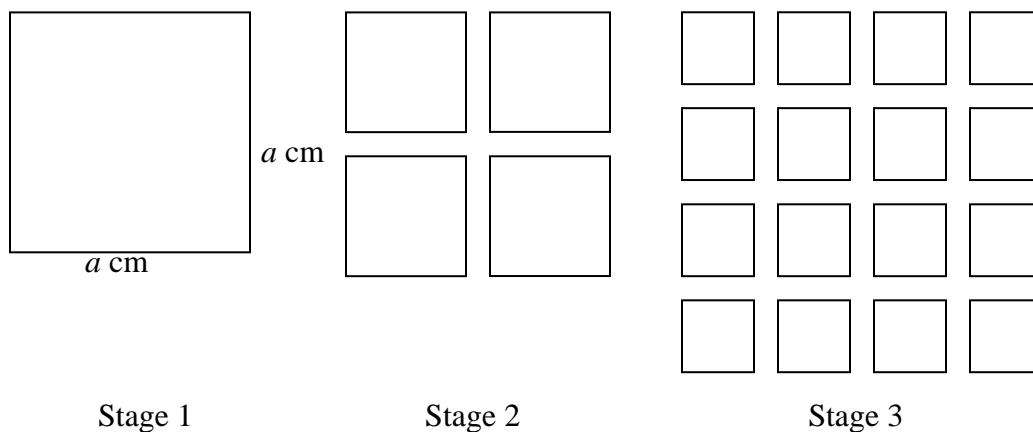


DIAGRAM 2

Given that the sum of the perimeters of the squares in every stage form a geometric progression.

- (a) If the sum of the perimeters of the squares cut in stage 10 is 10 240 cm, find the value of a . [2 marks]
- (b) Calculate the number of squares cut from stage 5 until stage 10. [4 marks]

- 6 In Diagram 3, ABC is a triangle. The point P lies on AC and the point Q lies on BC . The straight lines BP and AQ intersect at R .

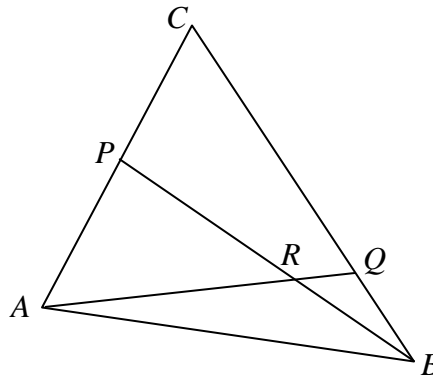


DIAGRAM 3

It is given that $\overrightarrow{AB} = 4\underline{x}$, $\overrightarrow{AC} = 6\underline{y}$, $AP = PC$ and $BC = 3BQ$.

- (a) Express in terms of \underline{x} and \underline{y}

(i) \overrightarrow{BP} ,

(ii) \overrightarrow{CQ} .

[3 marks]

- (b) Given that $\overrightarrow{BR} = \frac{2}{3}(-\underline{x} + \frac{3}{4}\underline{y})$ and $RP = mBR$.

(i) State \overrightarrow{BR} in terms of m , \underline{x} and \underline{y} .

- (ii) Hence, find the value of m .

[5 marks]

SECTION B

[40 marks]

Answer **four** questions from this section.

7 Use graph paper to answer this question.

Table 1 shows the values of two variables, x and y , obtained from an experiment.

The variables x and y are related by the equation $y = \frac{c}{x+d}$ where c and d are constants.

x	1	2	3	4	5
y	2.88	2.30	1.92	1.64	1.44

TABLE 2

(a) Plot xy against y , by using a scale of 2cm to 0.4 unit on the x -axis and 2cm to 1 unit on the y -axis.
Hence, draw the line of best fit. [5 marks]

(b) Use your graph from 7(a) to find the value of

(i) c ,

(ii) d ,

(iii) x when $y = \frac{5}{x}$.

[5 marks]

8 (a) Prove that $\operatorname{cosec} 2x = \tan x + \cot 2x$.

[4 marks]

(b) (i) Sketch the graph of $y = 2\sin x + 1$ for $0 \leq x \leq 2\pi$.

[3 marks]

(ii) Hence, sketch a suitable straight line on the same axes, and state the number of solutions to the equation $2\sin x = \frac{2}{\pi}x$ for $0 \leq x \leq 2\pi$.

[3 marks]

- 9 (a) The results of a study shows that 30% of the residents of a village are farmers. If 12 residents from the village are chosen at random, find the probability that
- exactly 5 of them are farmers,
 - less than 3 of them are farmers.

[5 marks]

- (b) The age of a group of teachers in a town follows a normal distribution with a mean of 40 years and a standard deviation of 5 years.

Find

- the probability that a teacher chosen randomly from the town is more than 42 years old.
- the value of m if 15% of the teachers in the town is more than m years old.

[5 marks]

- 10 Solutions by scale drawing will not be accepted.

Diagram 4 shows a straight line AD meets a straight line BC at point D .

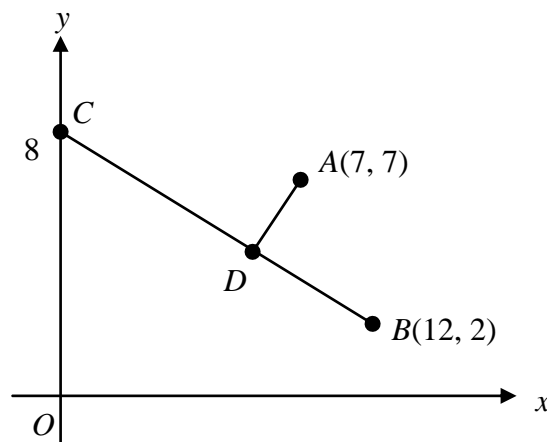


DIAGRAM 4

Given $\angle ADB = 90^\circ$ and point C lies on the y -axis.

- Find the equation of the straight line AD . [3 marks]
- Find the coordinates of point D . [3 marks]
- The straight line AD is extended to a point E such that $AD : DE = 1 : 2$. Find the coordinates of the point E . [2 marks]
- A point P moves such that its distance from point B is always 5 units. Find the equation of the locus of P . [2 marks]

11 (a) Diagram 5 shows a curve $y = x^2 - 4x$ and a straight line $y = x$.

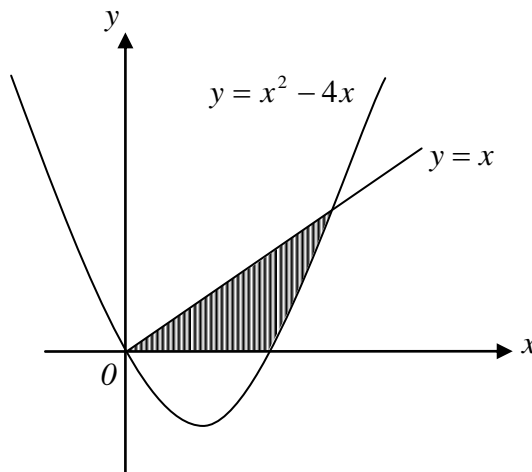


DIAGRAM 5

Find the volume of the solid generated when the shaded region is rotated through 360° about the x -axis.

[6 marks]

(b) The gradient of the curve $y = px^2 - qx$ at the point $(1, 2)$ is 5.

Find

- (i) the value of p and of q .
- (ii) the equation of the normal to the curve at the point $(1, 2)$.

[4 marks]

SECTION C

[20 marks]

Answer **two** questions from this section.

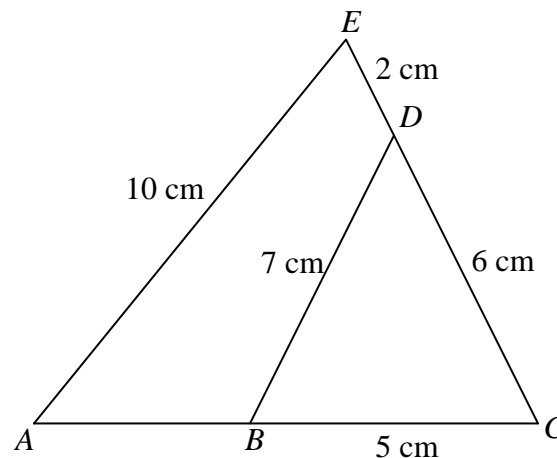
- 12** A particle starts moving in a straight line from a fixed point O . Its velocity $V \text{ ms}^{-1}$ is given by $V = 4t^2 - 8t + 3$, where t is the time in seconds after leaving O .

(Assume motion to the right is positive)

Find

- (a) the initial velocity of the particle. [1 mark]
- (b) the values of t when it is momentarily at rest. [2 marks]
- (c) the distance between the two positions where it is momentarily at rest. [3 marks]
- (d) the velocity when its acceleration is 16 m s^{-2} . [4 marks]

- 13** In the diagram, ABC and EDC are straight lines.



Given that $AE = 10 \text{ cm}$, $BE = 7 \text{ cm}$, $BC = 5 \text{ cm}$, $CD = 6 \text{ cm}$ and $DE = 2 \text{ cm}$. Calculate

- (a) $\angle BCD$, [2 marks]
- (b) $\angle AEC$, [3 marks]
- (c) AC , [2 marks]
- (d) the area of triangle BDE . [3 marks]

14 Use the graph paper provided to answer this question.

Mr. Simon has RM 3 600 to buy x scientific calculators and y reference books. The total number of scientific calculators and reference books is not less than 60. The number of reference books is at least half the number of scientific calculators. The price of a scientific calculator is RM 40 and the price of a reference book is RM 30.

- (a) Write three inequalities other than $x \geq 0$ and $y \geq 0$ that satisfy the conditions above. [3 marks]
- (b) By using a scale of 2 cm to 10 units on both axes, construct and shade the region R that satisfies all the conditions above. [3 marks]
- (c) If Mr. Simon buys 50 reference books, what is the maximum balance of money after the purchase? [4 marks]

15 Table 3 shows the monthly expenditure and weightage of Mohd Amirul for the year 2005 and 2007.

Item	Expenditure (RM)		Price Index	Weightage
	Year 2005	Year 2007		
Food	500	650	130	6
Rental	550	600	p	5
Transport	q	250	125	3
Others	360	r	135	4

TABLE 3

- (a) Find the values of p , q and r . [3 marks]
- (b) Find the composite index for the year 2007 based on the year 2005. [3 marks]
- (c) Given the composite index for the year 2008 based on the year 2007 is 128, calculate the monthly expenditure of Mohd Amirul for the year 2008. [4 marks]

END OF QUESTION PAPER

SULIT
3472/1
Additional
Mathematics
Paper 1
Sept
2008

SEKOLAH MENENGAH ZON A KUCHING
LEMBAGA PEPERIKSAAN

PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5

2008

ADDITIONAL MATHEMATICS

Paper 1

MARKING SCHEME

This marking scheme consists of 6 printed pages

PAPER 1 MARKING SCHEME

3472/1

Number	Solution and marking scheme	Sub Marks	Full Marks
1 (a)	0	1	
(b)	$x - 5$ or $f: x \rightarrow x - 5$ or $f(x) = x - 5$	1	2
2	$a = 1$ and $b = -1$ $gf(x) = x^2 + x - 1$ $(x - 1)^2 + 3(x - 1) + 1$	3 B2 B1	3
3 (a)	$\frac{1}{2}$	1	
(b)	$\frac{x+3}{2x+1}, x \neq -\frac{1}{2}$ $y = \frac{x-3}{1-2x}$	2 B1	3
4	$t > 1$ $-12t < -12$ or equivalent $(6)^2 - 12(t+2)(3) < 0$	3 B2 B1	3
5	$x^2 + 3x + 14 = 0$ $2\alpha(2\beta) = 14$ and $2\alpha + 2\beta = -3$ $\alpha + \beta = -\frac{3}{2}$ and $\alpha\beta = \frac{7}{2}$	3 B2 B1	3

Number	Solution and marking scheme	Sub Marks	Full Marks
6	$a = \frac{1}{2}$ $a(-2)^2 + 3 = 5$ $p = -2$ and $q = 3$	3 B2 B1	3
7	$-3 \leq x \leq 5$ $(x - 5)(x + 3) \leq 0$ $x^2 - 2x - 15 \leq 0$	3 B2 B1	3
8	$x = -4$ $x - 1 - 2x = 3$ or equivalent $3^{x-1-2x} = 3^3$ or $\frac{3^{x-1}}{3^{2x}} = 3^3$	3 B2 B1	3
9	$5 \cdot 1$ $\frac{\lg 2 + \lg 17}{\lg 2}$ $\frac{\lg 34}{\lg 2}$	3 B2 B1	3
10 (a)	$d = 5$ $a @ T_1 = 4$ or $T_2 = 9$	2 B1	3
(b)	585	1	
11	18, 54, 162 $n = 12$ or 54 or 18 or equivalent (Solving) $a = \frac{2}{19683}$ and $r = 3$	3 B2 B1	3

Number	Solution and marking scheme	Sub Marks	Full Marks
12 (a)	$k = 1000000$	2	4
	$\log_{10} y = 4 \log_{10} x + \log_{10} k$	B1	
(b)	$h = 22$	2	4
	$\frac{h-6}{4-0} = 4$	B1	
13	$h = \pm 2$	3	3
	$\frac{1}{2}(h+2h+0+h+5h-0) = \pm 9$	B2	
	$\frac{1}{2}(h+2h+0+h+5h-0)$	B1	
14	$p = 6$	3	3
	$\frac{p}{5} \left(-\frac{5}{6} \right) = -1$ or equivalent	B2	
	$m_1 = \frac{p}{5}$ or $m_2 = -\frac{5}{6}$	B1	
15	$m = -1$	3	3
	$\frac{1-m}{-5} = \frac{2}{-5}$	B2	
	$\underline{a} - \underline{b} = -5\underline{i} + (1-m)\underline{j}$	B1	
16 (a)	$\overline{BD} = \underline{i} - 5\underline{j}$	2	4
	$\overline{BD} = \overline{BA} + \overline{AD}$ or $\overline{BA} - \overline{BC}$	B1	
(b)	$\sqrt{50}$	2	
	$\overline{AC} = 7\underline{i} - \underline{j}$	B1	

Number	Solution and marking scheme	Sub Marks	Full Marks
17	$66.42^\circ, 293.58^\circ$ $\cos \theta = \frac{2}{5}$ $1 + 5 \cos \theta = 3$ or equivalent	3 B2 B1	3
18	$\frac{25}{7}$ $\frac{1}{1 - 2\left(-\frac{3}{5}\right)^2}$ $\frac{1}{\cos 2x}$	3 B2 B1	3
19 (a)	$r = 16$ $\angle AOC = 0.45$ or $7.2 = r(0.45)$	2 B1	4
(b)	344.576 or 334.58 or 334.6 $\frac{1}{2}(16)^2(2.692)$	2 B1	
20	$(-2, 2)$ and $(0, -2)$ $x = 0, -2$ $\frac{dy}{dx} = 0$ or $3x(x + 2) = 0$ $\frac{dy}{dx} = 3x^2 + 6x$	4 B3 B2 B1	4

Number	Solution and marking scheme	Sub Marks	Full Marks
21 (a)	$\frac{dy}{dx} = 24x + 36$ or equivalent	2	4
	$\frac{dy}{dm} = 6m$ and $\frac{dm}{dx} = 2$	B1	
(b)	1.08	2	
	$\delta y \approx [24(3) + 36] \times 0.01$	B1	
22	$-2(1-3x)^{\frac{1}{2}} + c$	3	3
	$\frac{3(1-3x)^{\frac{1}{2}}}{\frac{1}{2}(-3)} + c$	B2	
	$\frac{3(1-3x)^{\frac{1}{2}}}{\frac{1}{2}(-3)}$ or $\overline{\frac{1}{2}(-3)}$	B1	
23	$\frac{11}{15}$	3	3
	$1 - \frac{4}{5} \times \frac{1}{3}$ or equivalent	B2	
	$\frac{4}{5}$ or $\frac{1}{3}$	B1	
24 (a)	6	1	3
(b)	120	2	
	${}^6C_3 \times {}^4C_2$	B1	
25	$\sigma = 1.789$	3	3
	$\frac{51-50}{\sigma} = 0.559$	B2	
	0.559	B1	

3472/2
Matematik
Tambahan
Kertas 2
2 ½ jam
Sept 2008

SEKOLAH MENENGAH ZON A KUCHING
LEMBAGA PEPERIKSAAN

PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2008

MATEMATIK TAMBAHAN

Kertas 2

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

MARKING SCHEME

ADDITIONAL MATHEMATICS MARKING SCHEME

TRIAL ZON A KUCHING 2007 – PAPER 2

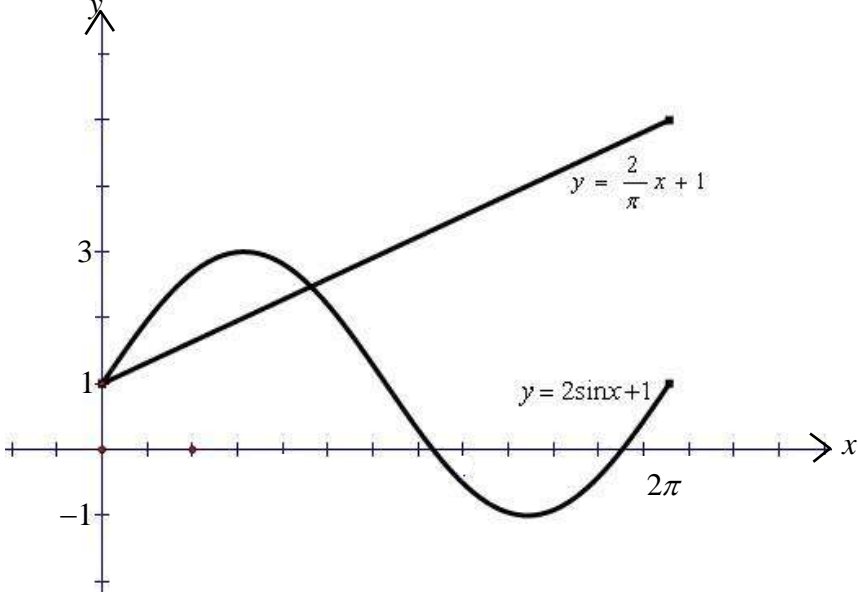
QUESTION NO.	SOLUTION	MARKS
1	<p>$p = 1 - m @ m = 1 - p$ P1</p> <p>$*(1 - m)^2 + 2m^2 + *(1 - m)m = 8$</p> <p>@</p> <p>$p^2 + 2*(1 - p)^2 + p(1 - *(1 - p)) = 8$ K1 Eliminate p or m</p> <p>$m = 2.138, m = -1.637$</p> <p>@</p> <p>$p = -1.137, p = 2.637$ N1</p> <p>OR</p> <p>$p = -1.137, p = 2.637$</p> <p>@</p> <p>$m = 2.138, m = -1.637$ N1</p> <p style="text-align: right;">K1 Solve the quadratic equation by using quadratic formula @ completing the square</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>$m = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(2)(-7)}}{2(2)}$</p> <p>@ $p = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(-6)}}{2(2)}$</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Note : OW-1 if the working of solving quadratic equation is not shown.</p> </div>	5
2 (a)	<p>K1 $\frac{dS}{dr} = 8\pi r$ or $\frac{dS}{dt} = \frac{dS}{dr} \times \frac{dr}{dt}$</p> <p>K1 $8\pi(3) \times 0.2$</p> <p>N1 $4.8\pi @ 15.08$</p>	3

QUESTION NO.	SOLUTION	MARKS
(b)	$\frac{dy}{dx} = 2x - 3 \text{ and } \frac{d^2y}{dx^2} = 2 \quad \text{P1}$ $2 + (2x - 3)^2 + 14x - 11 = x - 3x + 2 \quad \text{K1}$ $(3x - 1)(x + 2) = 0 \quad \text{K1}$ $x = \frac{1}{3}, -2 \quad \text{N1}$	<p style="text-align: center;">4</p> <div style="border: 1px solid black; width: 20px; height: 20px; margin-left: auto; margin-right: auto; text-align: center; line-height: 20px;">7</div>
3 (a)	$\bar{x} = 2.9 \text{ or } \Sigma fx^2 = 291 \quad \text{P1}$ $\sigma = \sqrt{\frac{291}{30} - (2.9)^2} \quad \text{K1} \quad \text{Use the formula}$ $\sigma = 1.1358 \quad \text{N1} \quad \text{Or equivalent}$	<p style="text-align: center;">3</p>
(b) (i)	$2(2.9) - c = 2.8 \quad \text{K1}$ $c = 3 \quad \text{N1}$	<p style="text-align: center;">3</p>
(ii)	$2 \times 1.1358^* = 2.2716^* \quad \text{N1}$	<div style="border: 1px solid black; width: 20px; height: 20px; margin-left: auto; margin-right: auto; text-align: center; line-height: 20px;">6</div>

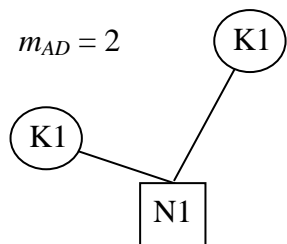
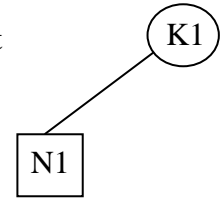
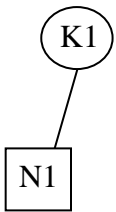
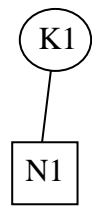
QUESTION NO.	SOLUTION	MARKS
4 (a)	$\cos \theta = \frac{3}{4}$ or $\theta = 41.41^\circ @ 41^\circ 25'$ P1 0.7227 rad N1	2
(b)	7.937 or $12(0.7227)$ or 8.672 K1 $7.937 + 12(0.7227) + 3$ K1 19.609 N1	3
(c)	$\frac{1}{2}(12)^2(0.7227) @ \frac{1}{2} \times 9 \times 7.937$ K1 $\frac{1}{2}(12)^2(0.7227) - \frac{1}{2} \times 9 \times 7.937$ K1 16.31 N1	3
5 (a)	$4a(2)^9 = 10\,240$ K1 $a = 5$ N1	6
(b)	$a = 1, r = 4$ (both correct) K1 $\frac{4^{10} - 1}{4 - 1}$ or $\frac{4^4 - 1}{4 - 1}$ K1 $= \frac{4^{10} - 1}{4 - 1} - \frac{4^4 - 1}{4 - 1}$ K1 $= 349\,440$ N1	6

QUESTION NO.	SOLUTION	MARKS
6 (a) (i)	$\overrightarrow{BP} = 3\underline{y} - 4\underline{x}$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">P1</div>	3
(ii)	$\overrightarrow{CQ} = \frac{2}{3}\overrightarrow{CB} \text{ or Equivalent}$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">K1</div> $\overrightarrow{CQ} = \frac{8}{3}\underline{x} - 4\underline{y}$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">N1</div> <td data-bbox="1312 604 1500 1199" rowspan="2" style="text-align: center; vertical-align: middle;">5</td>	5
(b) (i)	$\overrightarrow{BR} = \left(\frac{1}{m+1}\right)\overrightarrow{BP}$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">P1</div> $\overrightarrow{BR} = \left(\frac{1}{m+1}\right)(-4\underline{x} + 3\underline{y})$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">P1</div> $\left(\frac{1}{m+1}\right)(-4\underline{x} + 3\underline{y}) = \frac{2}{3}(-\underline{x} + \frac{3}{4}\underline{y})$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">K1</div> $\frac{-4}{m+1} = -\frac{2}{3} \quad @ \quad \frac{3}{m+1} = \frac{1}{2}$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">K1</div> $m = 5$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">N1</div>	
		8

QUESTION NO.	SOLUTION	MARKS												
7 (a)	<table border="1" data-bbox="459 331 1141 411"> <tr> <td>y</td> <td>2.88</td> <td>2.30</td> <td>1.92</td> <td>1.64</td> <td>1.44</td> </tr> <tr> <td>xy</td> <td>2.88</td> <td>4.6</td> <td>5.76</td> <td>6.56</td> <td>7.2</td> </tr> </table> <p data-bbox="505 474 1092 548"> N1 All values of xy correct (accept correct to 2 decimal places) </p> <p data-bbox="456 632 1003 688"> $xy = -dy + c$ P1 </p> <p data-bbox="418 747 659 783">Refer to the graph.</p> <div style="display: flex; flex-direction: column; align-items: flex-start;"> <div data-bbox="464 863 862 919"> K1 Plot xy against y </div> <div data-bbox="464 989 935 1045"> N1 6 points mark correctly </div> <div data-bbox="464 1115 829 1171"> N1 Line of best fit </div> <div data-bbox="402 1409 1263 1539"> <div style="display: flex; justify-content: space-between; width: 100%;"> <div data-bbox="402 1409 496 1444"> $m = -c$ </div> <div data-bbox="764 1367 837 1444"> K1 </div> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <div data-bbox="245 1430 318 1465">(b)(i)</div> <div data-bbox="402 1482 630 1518"> $p = 11.5 \pm 0.2$ </div> <div data-bbox="732 1472 805 1549"> N1 </div> <div data-bbox="984 1503 1154 1539"> $d = 3 \pm 0.2$ </div> <div data-bbox="1187 1472 1260 1549"> N1 </div> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <div data-bbox="256 1503 305 1539">(ii)</div> <div data-bbox="386 1591 496 1627"> $y = 2.16$ </div> <div data-bbox="570 1577 643 1654"> K1 </div> </div> <div style="display: flex; justify-content: space-between; width: 100%;"> <div data-bbox="256 1598 305 1633">(iii)</div> <div data-bbox="386 1703 464 1738">2.315</div> <div data-bbox="570 1692 643 1770"> N1 </div> </div> </div> </div>	y	2.88	2.30	1.92	1.64	1.44	xy	2.88	4.6	5.76	6.56	7.2	<p data-bbox="1365 331 1406 367">10</p>
y	2.88	2.30	1.92	1.64	1.44									
xy	2.88	4.6	5.76	6.56	7.2									
		<p data-bbox="1365 1818 1406 1854">10</p>												

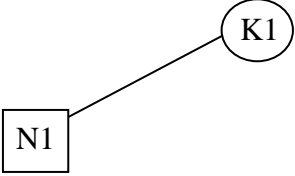
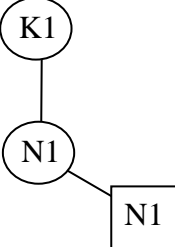
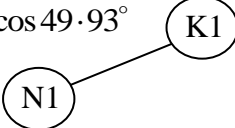
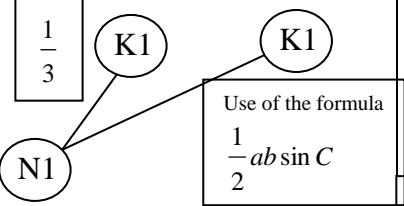
QUESTION NO.	SOLUTION	MARKS
8 (a)	$\frac{\sin x}{\cos x} + \frac{\cos 2x}{\sin 2x}$ <p style="text-align: right;">(K1)</p> $\frac{\sin x}{\cos x} + \frac{1 - 2\sin^2 x}{2\sin x \cos x}$ <p style="text-align: right;">(K1)</p> $\frac{1}{2\sin x \cos x}$ <p style="text-align: right;">(K1)</p> $\frac{1}{\sin 2x} \text{ or } \operatorname{cosec} 2x$ <p style="text-align: right;">(N1)</p>	1
(b) (i) & (ii)	 <p>Shape of sine curve (P1)</p> <p>Amplitude of 2 and 1 period (P1)</p> <p>Translation $\begin{pmatrix} 0 \\ 2 \end{pmatrix}$ (P1)</p> <p>$y = \frac{2x}{\pi} + 1$ (N1)</p> <p>Draw the straight line correctly (K1)</p> <p>Number of solutions = 2 (N1)</p>	6
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QUESTION NO.	SOLUTION	MARKS
<p>9</p> <p>(a) (i)</p> <p>(ii)</p>	$p = \frac{30}{100} = 0.3 \quad q = 0.7$ <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\therefore P[X = 5] = {}^{12}C_5(0.3)^5(0.7)^7$ $= 0.1585$ </div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px 10px;">P1</div> <div style="margin: 5px 0;"> </div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 10px;">K1</div> <div style="margin: 5px 0;"> </div> <div style="border: 1px solid black; padding: 2px 10px;">N1</div> </div> </div> $P[X = 0] + P[X = 1] + P[X = 2]$ $= (0.7)^{12} + {}^{12}C_1(0.3)^1(0.7)^{11} + {}^{12}C_2(0.3)^2(0.7)^{10}$ <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $= 0.2528$ </div> <div style="text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 10px;">K1</div> <div style="margin: 5px 0;"> </div> <div style="border: 1px solid black; padding: 2px 10px;">N1</div> </div> </div>	5
<p>(b)(i)</p> <p>(ii)</p>	$P\left(Z > \frac{42 - 40}{5}\right)$ <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $= 0.3446$ </div> <div style="text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 10px;">K1</div> <div style="margin: 5px 0;"> </div> <div style="border: 1px solid black; padding: 2px 10px;">N1</div> </div> </div> $P(X > m) = 0.15$ <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\frac{m - 40}{5} = 1.036$ $m = 45.180$ </div> <div style="text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 10px;">K1</div> <div style="margin: 10px 0;">/</div> <div style="border: 1px solid black; padding: 2px 10px;">N1</div> <div style="margin: 10px 0;">\</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 10px;">K1</div> </div> </div>	5
		10

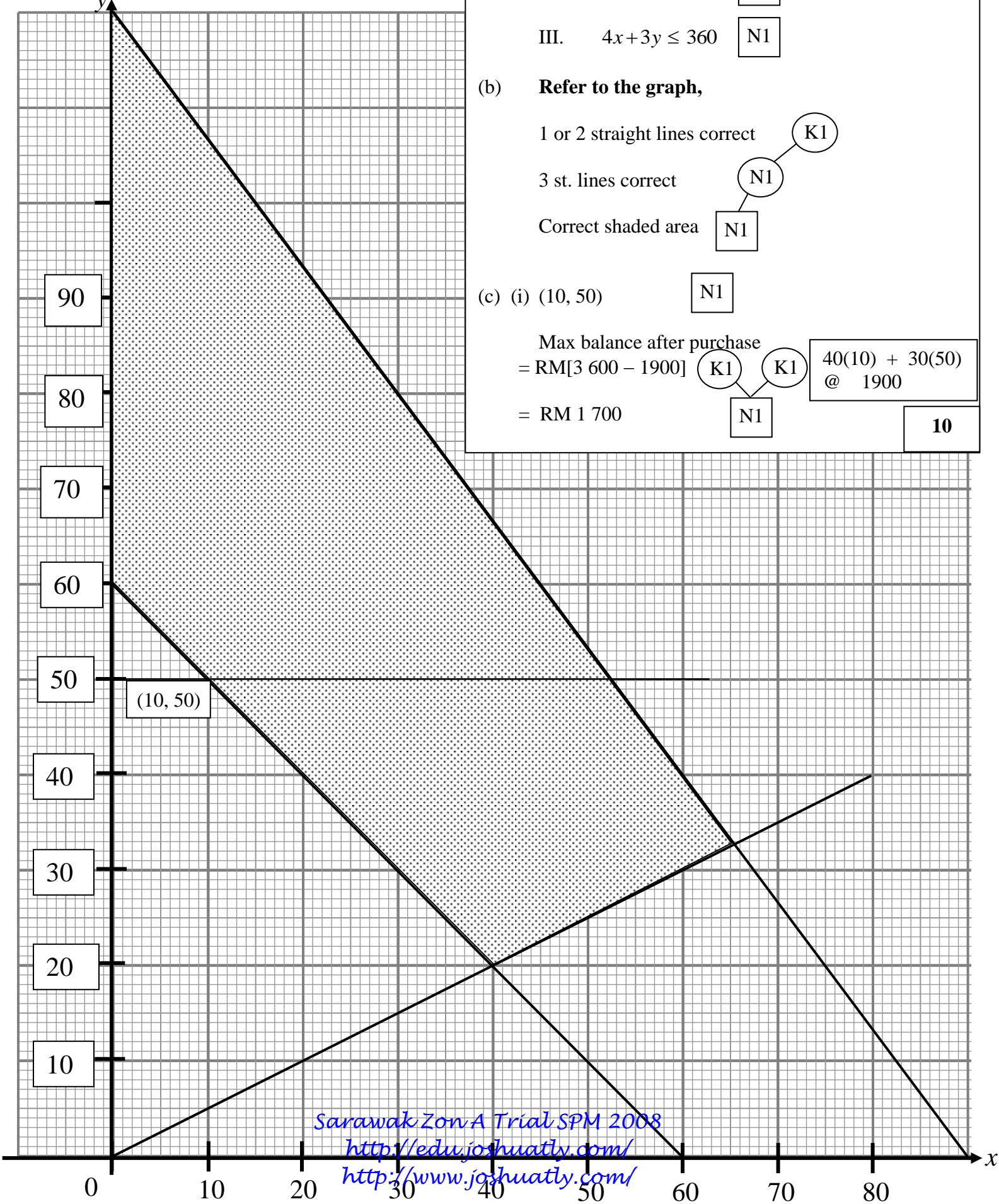
QUESTION NO.	SOLUTION	MARKS
10 (a)	$m_{BC} = -\frac{1}{2} \quad \text{or} \quad m_{AD} \times -\frac{1}{2} = -1 \quad \text{or} \quad m_{AD} = 2$ $y - 7 = 2(x - 7) \quad \text{or} \quad 7 = 2(7) + c$ $y = 2x - 7$ 	3
(b)	$y = -\frac{1}{2}x + 8$ $2x - 7 = -\frac{1}{2}x + 8 \quad \text{or} \quad \text{equivalent}$ $D(6, 5)$ 	3
(c)	$\frac{x+7(2)}{1+2} = 6 \quad \text{or} \quad \frac{y+7(2)}{1+2} = 5$ $E(4, 1)$ 	2
(d)	$\sqrt{(x-12)^2 + (y-2)^2} = 5$ $x^2 + y^2 - 24x - 4y + 123 = 0$ 	2
		10

QUESTION NO.	SOLUTION	MARKS
11 (a)	$x = 0, 5$ <div style="text-align: right; margin-right: 100px;">N1</div> $\frac{125}{3}\pi$ <div style="text-align: right; margin-right: 150px;">K1</div> $\frac{1}{3}\pi(5)^2(5) - \int_4^5 \pi(x^2 - 4x)^2 dx$ $\pi \left[\frac{x^5}{5} - 2x^4 + 16\frac{x^3}{3} \right]_4^5$ $\pi \left[\left(\frac{5^5}{5} - 2(5)^4 + \frac{16}{3}(5)^3 \right) - \left(\frac{4^5}{5} - 2(4)^4 + \frac{16}{3}(4)^3 \right) \right]$ <div style="text-align: right; margin-right: 100px;">K1</div> $34\frac{2}{15}\pi$ <div style="text-align: right; margin-right: 50px;">N1</div>	6
(b) (i)	$\frac{dy}{dx} = 2px - q \quad \text{or} \quad 5 = 2p - q \quad \text{@ equivalent} \quad \text{or} \quad 2 = p - q$ <div style="text-align: right; margin-right: 100px;">K1</div> $p = 3, q = 1$ <div style="text-align: right; margin-right: 100px;">N1</div>	4
(ii)	$\text{Gradient of normal} = -\frac{1}{5}$ <div style="text-align: right; margin-right: 100px;">K1</div> $5y + x = 11 \quad \text{or} \quad \text{equivalent}$ <div style="text-align: right; margin-right: 50px;">N1</div>	10

QUESTION NO.	SOLUTION	MARKS
12 (a)	$V_o = 3$ <div style="display: inline-block; border: 1px solid black; padding: 2px 5px; margin-left: 100px;">P1</div>	1
(b)	$4t^2 - 8t + 3 = 0$ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 100px;">K1</div> Use $v = 0$ $(2t - 3)(2t - 1) = 0$ $t = \frac{3}{2}, \frac{1}{2}$ <div style="display: inline-block; border: 1px solid black; padding: 2px 5px; margin-left: 100px;">N1</div>	2
(c)	$= \left \left[\frac{4}{3}t^3 - 4t^2 + 3t \right]_{\frac{1}{2}}^{\frac{3}{2}} \right $ <div style="display: inline-block; margin-left: 150px;">Integrate $\int v dt$</div> <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 10px;">K1</div> $= \left \left[\frac{4}{3} \left(\frac{3}{2} \right)^3 - 4 \left(\frac{3}{2} \right)^2 + 3 \left(\frac{3}{2} \right) \right] - \left[\frac{4}{3} \left(\frac{1}{2} \right) - 4 \left(\frac{1}{2} \right)^2 + 3 \left(\frac{1}{2} \right) \right] \right $ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 10px;">K1</div> $= \frac{2}{3} m$ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 100px;">N1</div>	3
(d)	$a = 8t - 8$ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 100px;">K1</div> $t = 3s$ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 100px;">N1</div> $V_3 = 4(3)^2 - 8(3) + 3$ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 10px;">K1</div> $= 15ms^{-1}$ <div style="display: inline-block; border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin-left: 10px;">N1</div>	4
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QUESTION NO.	SOLUTION	MARKS
13 (a)	$\cos \angle BCD = \frac{5^2 + 6^2 - 7^2}{2(5)(6)}$ $\angle BCD = 78.46^\circ @ 78^\circ 28'$ 	2
(b)	$\frac{\sin \angle CAE}{8} = \frac{\sin 78.46^\circ}{10}$ $* \angle CAE = 51.61^\circ @ 51^\circ 37'$ $* \angle AEC = 49.93^\circ$ 	3
(c)	$AC = 10^2 + 8^2 - 2(10)(8) \cos 49.93^\circ$ $AC = 7.8105$ 	2
(d)	$\text{Area of } \triangle BDE = \frac{1}{3} \times \frac{1}{2} \times 5 \times 6 \times \sin 78.46^\circ$ $= 4.8989$ 	3
		10

Answer for question 14



- (a) I. $x + y \geq 60$ N1
- II. $y \geq \frac{1}{2}x$ N1
- III. $4x + 3y \leq 360$ N1

- (b) **Refer to the graph,**
- 1 or 2 straight lines correct K1
 - 3 st. lines correct N1
 - Correct shaded area N1

- (c) (i) (10, 50) N1
- Max balance after purchase
 = RM[3 600 – 1900] K1 K1
 = RM 1 700 N1
- $40(10) + 30(50)$
 @ 1900
- 10**

<p>15 (a)</p>	<p>Use of formula $I = \frac{Q_1}{Q_0} \times 100$ (K1)</p> <p> $p = 109.1$ $q = 200$ $r = 486$ </p> <p>} (N 2, 1, 0)</p>	<p>5</p>
<p>(b)</p>	<p> $I = \frac{130 \times 6 + 109.1 \times 5 + 125 \times 3 + 135 \times 4}{18}$ (K1) $= \frac{2240.5}{18}$ (K1) $= 124.5$ (N1) </p>	
<p>(c)</p>	<p>Monthly expenditure for Year 2007 = 1986 (K1)</p> <p> $\frac{x}{1986} \times 100 = 128$ (K1) RM2542.08 (N1) </p>	
		<p>10</p>

Answer for question 7

