

NO. KAD PENGENALAN

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ANGKA GILIRAN

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Nama Tingkatan



KEMENTERIAN
PENDIDIKAN
MALAYSIA

Jabatan Pendidikan Negeri Selangor



**MODUL PINTAS 2018
TINGKATAN 5**

3472/1

ADDITIONAL MATHEMATICS
Kertas 1
September/Oktober

2 jam

Dua jam

**JANGAN BUKA KERTAS PEPERIKSAAN INI
SEHINGGA DIBERITAHU**

1. *Tulis nombor kad pengenalan, angka giliran, nama dan tingkatan anda pada petak yang disediakan.*
2. *Kertas peperiksaan ini adalah dalam dwibahasa.*
3. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas peperiksaan ini.*

Untuk Kegunaan Pemeriksa

Kod Pemeriksa :

Soalan	Markah Penuh	Markah Diperoleh
1	3	
2	3	
3	3	
4	3	
5	2	
6	2	
7	3	
8	3	
9	3	
10	4	
11	3	
12	4	
13	4	
14	4	
15	4	
16	3	
17	3	
18	3	
19	4	
20	4	
21	3	
22	3	
23	3	
24	3	
25	3	
Jumlah	80	

Kertas peperiksaan ini mengandungi 32 halaman bercetak.

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

Rumus-rumus berikut boleh membantu anda menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

ALGEBRA

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS KALKULUS

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

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

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

$$4 \quad \text{Area under a curve} \\ \text{Luas di bawah lengkung} \\ = \int_a^b y \, dx \text{ or (atau)} \\ = \int_a^b x \, dy$$

$$5 \quad \text{Volume of revolution} \\ \text{Isi padu kisanan} \\ = \int_a^b \pi y^2 \, dx \text{ or (atau)} \\ = \int_a^b \pi x^2 \, dy$$

STATISTICS
STATISTIK

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

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

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

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

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

$$6 \quad I = \frac{Q_1}{Q_0} \times 100$$

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

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

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

$$10 \quad P(A) = \frac{n(A)}{n(S)}$$

$$11 \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$12 \quad P(X=r) = {}^n C_r p^r q^{n-r}, p+q=1$$

$$13 \quad \text{Mean / Min}, \mu = np$$

$$14 \quad \sigma = \sqrt{npq}$$

$$15 \quad Z = \frac{X - \mu}{\sigma}$$

GEOMETRY
GEOMETRI

1 Distance / Jarak

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

2 Midpoint / Titik tengah

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

3 A point dividing a segment of a line

Titik yang membahagi suatu tembereng garis

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

4 Area of triangle / Luas segi tiga

$$= \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

$$5 \quad |\underline{r}| = \sqrt{x^2 + y^2}$$

$$6 \quad \hat{r} = \frac{x\mathbf{i} + y\mathbf{j}}{\sqrt{x^2 + y^2}}$$

TRIGONOMETRY
TRIGONOMETRI

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Arc length, $s = r \theta$
<i>Panjang lengkok, $s = j \theta$</i></p> | <p>8 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$</p> |
| <p>2 Area of sector, $A = \frac{1}{2} r^2 \theta$
<i>Luas sektor, $L = \frac{1}{2} j^2 \theta$</i></p> | <p>9 $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$
$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$</p> |
| <p>3 $\sin^2 A + \cos^2 A = 1$
$\sin^2 A + \cos^2 A = 1$</p> | <p>10 $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$</p> |
| <p>4 $\sec^2 A = 1 + \tan^2 A$
$\sec^2 A = 1 + \tan^2 A$</p> | <p>11 $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$</p> |
| <p>5 $\operatorname{cosec}^2 A = 1 + \cot^2 A$
$\operatorname{kosek}^2 A = 1 + \cot^2 A$</p> | <p>12 $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$</p> |
| <p>6 $\sin 2A = 2 \sin A \cos A$
$\sin 2A = 2 \sin A \cos A$</p> | <p>13 $a^2 = b^2 + c^2 - 2bc \cos A$
$a^2 = b^2 + c^2 - 2bc \cos A$</p> |
| <p>7 $\cos 2A = \cos^2 A - \sin^2 A$
$= 2 \cos^2 A - 1$
$= 1 - 2 \sin^2 A$

$\cos 2A = \cos^2 A - \sin^2 A$
$= 2 \cos^2 A - 1$
$= 1 - 2 \sin^2 A$</p> | <p>14 Area of triangle / <i>Luas segi tiga</i>
$= \frac{1}{2} ab \sin C$</p> |

Answer all questions.

Jawab semua soalan.

1 Solve the equation

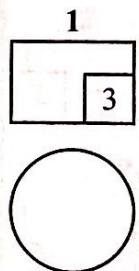
Selesaikan persamaan

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

[3 marks]

[3 markah]

Answer / Jawapan:



2

Given the last term of an arithmetic progression of 20 terms is 195 and the common difference is 5.

Calculate the sum of the progression.

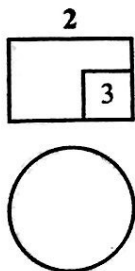
[3 marks]

Diberi sebutan terakhir bagi satu jangjang aritmetik yang mempunyai 20 sebutan ialah 195 dan beza sepanyanya ialah 5.

Hitung hasil tambah bagi jangjang tersebut.

[3 markah]

Answer / Jawapan:



3 A set of six numbers has a mean of 30. When two numbers a and $(a - 6)$ are added to the set, the mean becomes 27.

Find the value of a .

[3 marks]

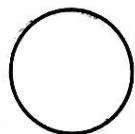
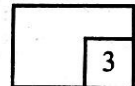
Satu set yang terdiri daripada enam nombor mempunyai min 30. Apabila dua nombor a dan $(a - 6)$ ditambah kepada set itu, nilai min menjadi 27.

Cari nilai a .

[3 markah]

Answer / Jawapan:

3



4

Diagram 4 shows the graph of a quadratic function $y = k - (x + h)^2$, where k and h are constants.

Rajah 4 menunjukkan graf fungsi kuadratik $y = k - (x + h)^2$, dengan keadaan k dan h ialah pemalar.

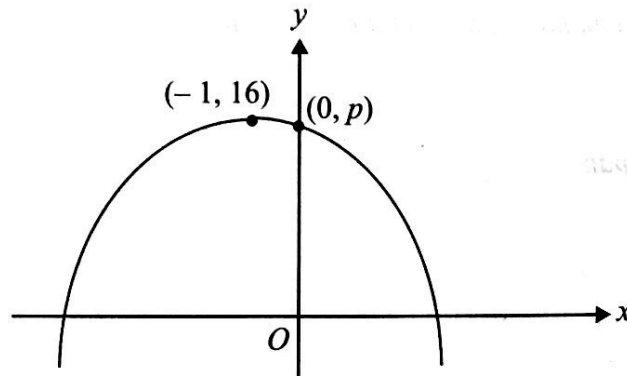


Diagram 4
Rajah 4

Find the values of h , of k and of p .

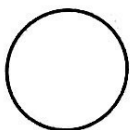
Cari nilai h , nilai k dan nilai p .

[3 marks]
[3 markah]

Answer / Jawapan:

4

3



- 5 Given the points $(k, 4)$, $(1, 1)$ and $(-k, -8)$ are collinear.

Find the value of k .

[2 marks]

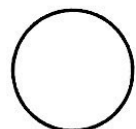
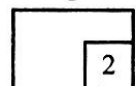
Diberi titik-titik $(k, 4)$, $(1, 1)$ dan $(-k, -8)$ adalah segaris.

Cari nilai k .

[2 markah]

Answer / Jawapan:

5



6 Diagram 6 shows vector \vec{OA} drawn on a Cartesian plane.

Rajah 6 menunjukkan vektor \vec{OA} dilukis di atas satah Cartes.

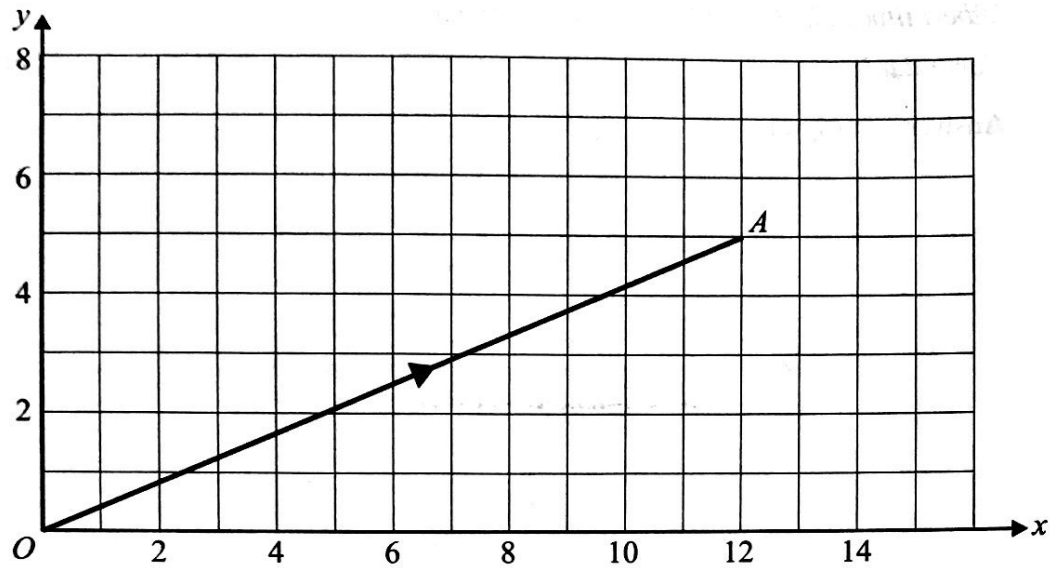


Diagram 6

Rajah 6

Find the unit vector in the direction of \vec{OA} .

[2 marks]

Cari vektor unit dalam arah \vec{OA} .

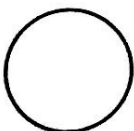
[2 markah]

Answer / Jawapan:

6

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2



- 7 Diagram 7 shows a parallelogram $KLMN$. The diagonals intersect at T .

Rajah 7 menunjukkan sebuah sisi empat selari $KLMN$. Pepenjuru-pepenjuru bersilang di T .

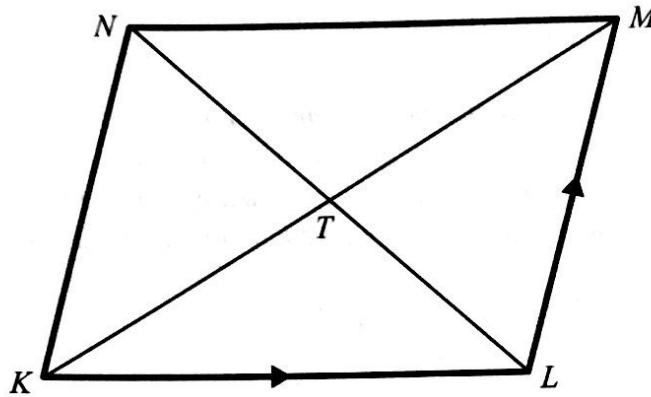


Diagram 7

Rajah 7

It is given that $\vec{KL} = 2\vec{x} + 3\vec{y}$ and $\vec{LM} = -4\vec{x} + 5\vec{y}$.

Find \vec{TN} in terms of \vec{x} and \vec{y} .

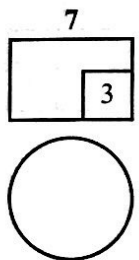
Diberi bahawa $\vec{KL} = 2\vec{x} + 3\vec{y}$ dan $\vec{LM} = -4\vec{x} + 5\vec{y}$.

Cari \vec{TN} dalam sebutan \vec{x} dan \vec{y} .

[3 marks]

[3 markah]

Answer / Jawapan:



8

Lim is working at a printing company. He starts to save money for himself. Lim saves RM p in the first month and his saving increases constantly by RM q for every subsequent month. He saves RM205 in the 8th month and the total saving for 12 months is RM2 190.

Find the value of p and of q .

[3 marks]

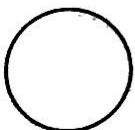
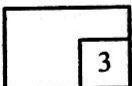
Lim bekerja di sebuah syarikat percetakan. Dia mula menyimpan duit untuk dirinya. Lim menyimpan RM p dalam bulan pertama dan simpanannya meningkat secara malar sebanyak RM q bagi setiap bulan berikutnya. Dia menyimpan RM205 pada bulan ke-8 dan jumlah simpanan untuk 12 bulan ialah RM2 190.

Cari nilai p dan nilai q .

[3 markah]

Answer / Jawapan:

8



- 9 It is given that the first four terms in a geometric progression are 8, h , k and 64.

Find the value of h and of k .

Diberi bahawa empat sebutan pertama bagi suatu jantang geometri ialah 8, h , k dan 64.

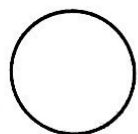
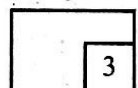
Cari nilai h dan nilai k .

[3 marks]

[3 markah]

Answer / Jawapan:

9



10 Given that $\log_{10} y = 1 + t \log_{10} b$, where y is the remaining material compared to time, t is the time taken and b is a constant.

Diberi bahawa $\log_{10} y = 1 + t \log_{10} b$, di mana y ialah baki bahan berbanding masa, t ialah masa yang diambil dan b ialah pemalar.

(a) Express y in terms of b and t .

Ungkapkan y dalam sebutan b dan t .

(b) The remaining material after 5 hours is 320 units. Calculate the value of b .

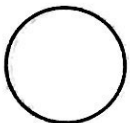
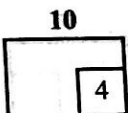
Baki bahan selepas 5 jam ialah 320 unit. Hitung nilai b .

[4 marks]
[4 markah]

Answer / Jawapan:

(a)

(b)



11 It is given that $\int_2^4 f(x)dx = 8$ and $\int_2^4 [10k + f(x)]dx = 24$.

Find the value of k .

[3 marks]

Diberi bahawa $\int_2^4 f(x)dx = 8$ dan $\int_2^4 [10k + f(x)]dx = 24$.

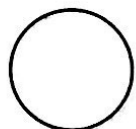
Cari nilai k .

[3 markah]

Answer / Jawapan:

11

	3
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12 Diagram 12 shows a sector OAB with centre O and radius 17 cm.

Rajah 12 menunjukkan sebuah sektor OAB dengan pusat O dan berjejari 17 cm.

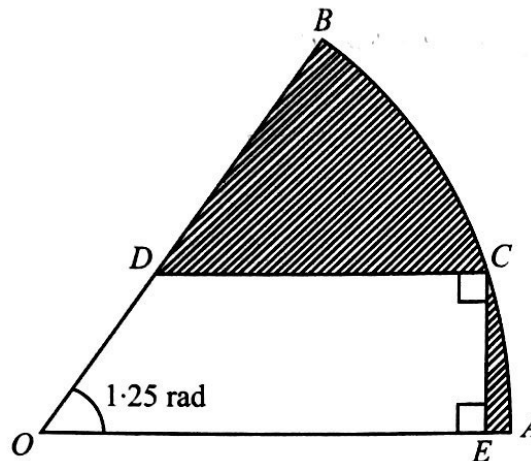


Diagram 12

Rajah 12

It is given that $ODCE$ is a trapezium with $OE = 15$ cm and $5CD = 4EO$.

Find the area, in cm^2 , of the shaded region.

Diberi bahawa $ODCE$ ialah sebuah trapezium dengan $OE = 15$ cm dan $5CD = 4EO$.

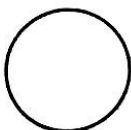
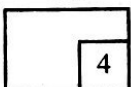
Cari luas, dalam cm^2 , kawasan berlorek.

[4 marks]

[4 markah]

Answer / Jawapan:

12



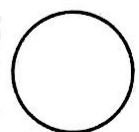
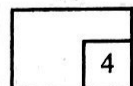
- 13 Given that $V = r^2h$ and $h + r = 6$.
Find the largest possible value of V .
*Diberi bahawa $V = r^2h$ dan $h + r = 6$.
Cari nilai terbesar yang mungkin bagi V .*

[4 marks]

[4 markah]

Answer / Jawapan:

13



- 14 The surface area of a spherical ball bearing in Diagram 14 increases at a rate of $4.2\pi \text{ cm}^2\text{s}^{-1}$ when heated.

Luas permukaan sebuah gelas bebola berbentuk sfera pada Rajah 14 bertambah dengan kadar $4.2\pi \text{ cm}^2\text{s}^{-1}$ setelah dipanaskan.

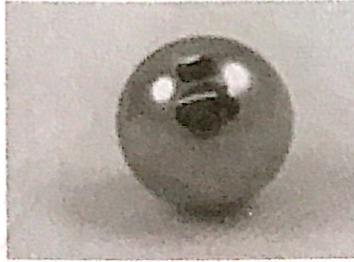


Diagram 14

Rajah 14

Find
Cari

- (a) the rate of change of the radius of the ball bearing when its radius is 3 cm,
kadar perubahan jejari gelas bebola apabila jejarinya 3 cm,
- (b) the corresponding rate of change of the volume of the ball bearing.
kadar perubahan isi padu gelas bebola yang sepadan.

$$[A = 4\pi r^2, V = \frac{4}{3}\pi r^3]$$

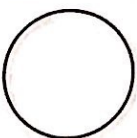
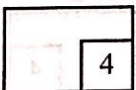
[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)

14



15 Given that $\tan A = -\frac{5}{12}$, where $180^\circ \leq A \leq 360^\circ$.

Diberi bahawa $\tan A = -\frac{5}{12}$, di mana $180^\circ \leq A \leq 360^\circ$.

Find

Cari

(a) $\tan 2A$,

(b) $\cos \frac{1}{2}A$.

$\cos \frac{1}{2}A$.

[4 marks]
[4 markah]

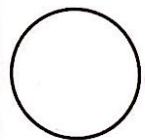
Answer / Jawapan:

(a)

(b)

15

15	4
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16 Solve the equation $6 \sin x \cos x = -1$ for $0^\circ \leq x \leq 360^\circ$.

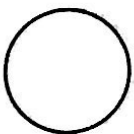
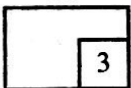
[3 marks]

Selesaikan persamaan $6 \sin x \cos x = -1$ untuk $0^\circ \leq x \leq 360^\circ$.

[3 markah]

Answer / Jawapan:

16



- 17 Diagram 17 shows a graph of y^2 against x^2 . The variables x and y are related by the equation $3y^2 + x^2 = -2$.

Rajah 17 menunjukkan graf y^2 melawan x^2 . Pembolehubah x dan y dihubungkan oleh persamaan $3y^2 + x^2 = -2$.

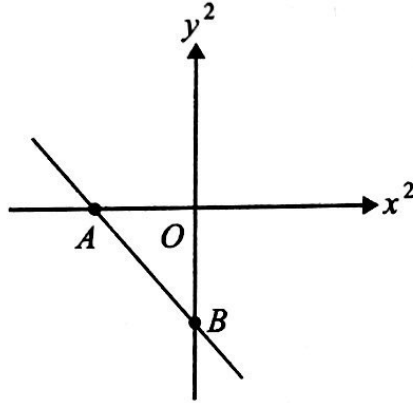


Diagram 17

Rajah 17

Find coordinates of points A and B .

Cari koordinat bagi titik A dan B .

[3 marks]

[3 markah]

Answer / Jawapan:

17

	3
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Examiner's
Use

- 18 Given $A(3, 2)$ and $B(6, 4)$ are two points in a Cartesian plane. P is a moving point such that $\angle APB = 90^\circ$.

Find the equation of the locus P .

[3 marks]

Diberi $A(3, 2)$ and $B(6, 4)$ ialah dua titik pada satah Cartes. P ialah satu titik yang bergerak dengan keadaan $\angle APB = 90^\circ$.

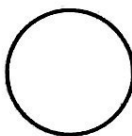
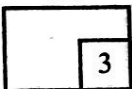
Cari persamaan lokus P .

[3 markah]

Answer / Jawapan:



18



19 Diagram 19 shows four letter cards and five digit cards.

Rajah 19 menunjukkan empat kad huruf dan lima kad digit.

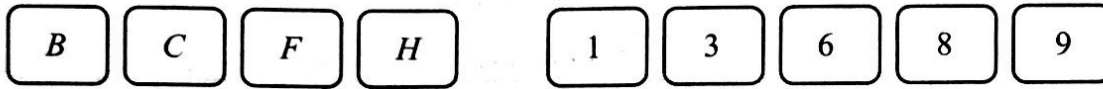


Diagram 19

Rajah 19

Three letters and three digit cards are taken from 9 cards to form a car plate number.

How many ways to form a car plate number if

Tiga kad huruf dan tiga kad digit diambil daripada 9 kad tersebut untuk membentuk satu plat nombor kereta.

Berapakah cara untuk membentuk plat nombor kereta jika

- (a) it must begin with letter 'C',
ia mesti bermula dengan huruf 'C',
- (b) it begins with letter 'C' and ends with digit 6.
ia bermula dengan huruf 'C' dan berakhir dengan digit 6.

[4 marks]

[4 markah]

Answer / Jawapan:

(a)

(b)

For
Examiner's
Use

- 20 Table 20 shows the age of a group of workers in a hypermarket. Two workers are chosen at random.

Jadual 20 menunjukkan umur bagi sekumpulan pekerja di sebuah pasar raya. Dua orang pekerja dipilih secara rawak.

Age (years) Umur (tahun)	20 – 29	30 – 39	40 – 49	50 – 59
Number of workers Bilangan pekerja	12	15	6	3

Table 20

Jadual 20

Find the probability that

Cari kebarangkalian bahawa

- (a) both of them aged 20 – 29,
kedua-duanya berumur 20 – 29,
- (b) one of them aged below 40.
salah seorang daripada mereka berumur bawah 40.

[4 marks]

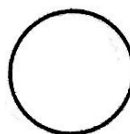
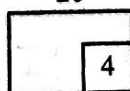
[4 markah]

Answer / Jawapan:

(a)

(b)

20



- 21 Given $f: x \rightarrow ax + b$, where a and b are constants, $g: x \rightarrow x + 7$, $fg(1) = 7$ and $gf(2) = 20$.

Find $fg(3)$.

Diberi $f: x \rightarrow ax + b$, dengan keadaan a dan b ialah pemalar, $g: x \rightarrow x + 7$, $fg(1) = 7$ dan $gf(2) = 20$.

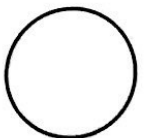
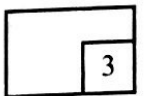
Cari $fg(3)$.

[3 marks]

[3 markah]

Answer / Jawapan:

21



[Lihat halaman sebelah

For
Examiner's
Use

22 Given that the two roots of the quadratic equation $x^2 + (2 - p)x + 12 = 0$ differ by 4, find the possible values of p .

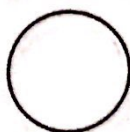
Diberi dua punca persamaan kuadratik $x^2 + (2 - p)x + 12 = 0$ berbeza sebanyak 4, cari nilai-nilai yang mungkin bagi p .

[3 marks]
[3 markah]

Answer / Jawapan:

22

	3
--	---



23 Diagram 23 shows a normal distribution graph.

Rajah 23 menunjukkan satu graf taburan normal.

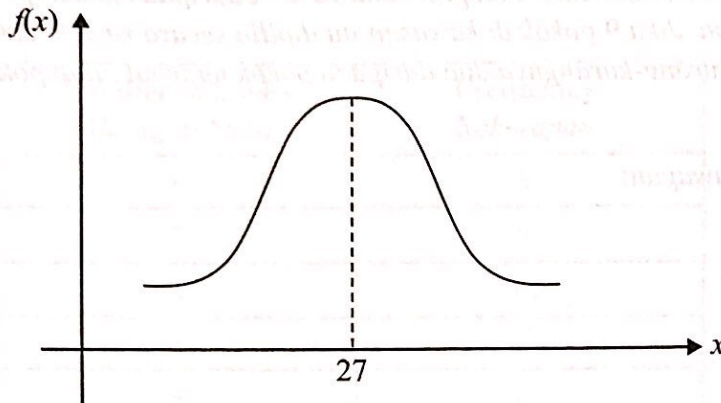


Diagram 23

Rajah 23

Given the standard deviation is 6.4, find

Diberi sisihan piawai 6.4, cari

(a) the value of X if the z-score is 0.85,

nilai X jika skor-z ialah 0.85,

(b) $P(Z < 0.85)$.

[3 marks]

[3 markah]

Answer / Jawapan:

(a)

(b)

23

	3
--	---



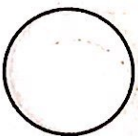
24 In a certain area, it was found that 40% of the trees are coconut trees. If 9 trees in the area are chosen at random, find the probability that at least two of the trees are coconut trees. [3 marks]

Di suatu kawasan tertentu, didapati bahawa 40% daripada pokok-pokok di situ adalah pokok kelapa. Jika 9 pokok di kawasan itu dipilih secara rawak, cari kebarangkalian bahawa sekurang-kurangnya dua daripada pokok tersebut ialah pokok kelapa. [3 markah]

Answer / Jawapan:



24
3



- 25 Table 25 shows the number of books borrowed by a group of students in a certain week.

Jadual 25 menunjukkan bilangan buku yang dipinjam oleh sekumpulan murid dalam suatu minggu tertentu.

Number of books <i>Bilangan buku</i>	Frequency <i>Kekerapan</i>
1	3
2	7
3	10
4	x
5	6

Table 25
Jadual 25

- (a) Find the maximum value of x if the mode of number of books borrowed is 3.
Cari nilai maksimum x jika mod bilangan buku yang dipinjam ialah 3 buah.
- (b) Find the minimum value of x if the mean of number of books borrowed is more than 3.
Cari nilai minimum x jika min bilangan buku yang dipinjam adalah lebih daripada 3 buah.

[3 marks]

[3 markah]

Answer / *Jawapan:*

(a)

(b)

END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT



**THE UPPER TAIL PROBABILITY $Q(z)$ FOR THE NORMAL DISTRIBUTION $N(0,1)$
 KEBARANGKALIAN Hujung Atas $Q(z)$ BAGI TABURAN NORMAL $N(0, 1)$**

z										Minus / Tolak									
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859	4	8	12	15	19	23	27	31	35
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483	4	7	11	15	19	22	26	30	34
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121	4	7	11	15	18	22	25	29	32
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776	3	7	10	14	17	20	24	27	31
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451	3	7	10	13	16	19	23	26	29
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148	3	6	9	12	15	18	21	24	27
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867	3	5	8	11	14	16	19	22	25
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611	3	5	8	10	13	15	18	20	23
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379	2	5	7	9	12	14	16	19	21
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170	2	4	6	8	10	12	14	16	18
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985	2	4	6	7	9	11	13	15	17
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823	2	3	5	6	8	10	11	13	14
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681	1	3	4	6	7	8	10	11	13
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559	1	2	4	5	6	7	8	10	11
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455	1	2	3	4	5	6	7	8	9
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367	1	2	3	4	4	5	6	7	8
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294	1	1	2	3	4	4	5	6	6
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233	1	1	2	2	3	4	4	5	5
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183	0	1	1	2	2	3	3	4	4
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143	0	1	1	2	2	2	3	3	4
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110	0	1	1	1	2	2	2	3	3
2.3	0.0107	0.0104	0.0102								0	1	1	1	1	2	2	2	2
			0.00990	0.00964	0.00939	0.00914					3	5	8	10	13	15	18	20	23
								0.00889	0.00866	0.00842	2	5	7	9	12	14	16	16	21
2.4	0.00820	0.00798	0.00776	0.00755	0.00734						2	4	6	8	11	13	15	17	19
						0.00714	0.00695	0.00676	0.00657	0.00639	2	4	6	7	9	11	13	15	17
2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480	2	3	5	6	8	9	11	12	14
2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357	1	2	3	5	6	7	9	9	10
2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264	1	2	3	4	5	6	7	8	9
2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193	1	1	2	3	4	4	5	6	6
2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139	0	1	1	2	2	3	3	4	4
3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100	0	1	1	2	2	2	3	3	4

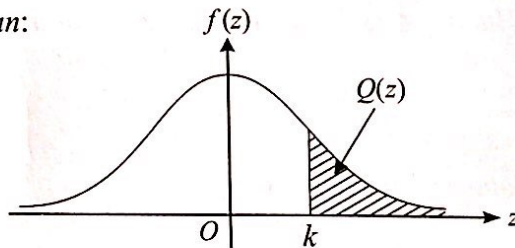
For negative z use relation:

Bagi z negatif guna hubungan:

$$Q(z) = 1 - Q(-z) = P(-z)$$

$$f(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2}z^2\right)$$

$$Q(z) = \int_k^{\infty} f(z) dz$$



Example / Contoh:

If $X \sim N(0, 1)$, then

Jika $X \sim N(0, 1)$, maka

$$P(X > k) = Q(k)$$

$$P(X > 2.1) = Q(2.1) = 0.0179$$



KEMENTERIAN
PENDIDIKAN
MALAYSIA

Jabatan Pendidikan Negeri Selangor



MODUL PINTAS 2018 TINGKATAN 5

3472/2

ADDITIONAL MATHEMATICS

Kertas 2

September/Oktober

2 $\frac{1}{2}$ jam

Dua jam tiga puluh minit

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

1. *Kertas peperiksaan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*
4. *Calon dikehendaki menceraikan halaman 31 dan cantumkan sebagai muka hadapan bersama-sama dengan kertas jawapan dengan menggunakan stapler atau menebuk lubang dan ikat.*

Kertas peperiksaan ini mengandungi 32 halaman bercetak.

Section A
Bahagian A

[40 marks]

[40 markah]

Answer all questions.

Jawab semua soalan.

- 1 (a) Diagram 1 shows a regular hexagon, $ABCDEF$ with centre G .
The position vectors of A , B and C relative to an origin O are \underline{a} , \underline{b} and \underline{c} respectively.

Rajah 1 menunjukkan sebuah heksagon sekata, $ABCDEF$ yang berpusat di G .

Vektor kedudukan A , B dan C relatif kepada asalan, O ialah \underline{a} , \underline{b} dan \underline{c} masing-masing.

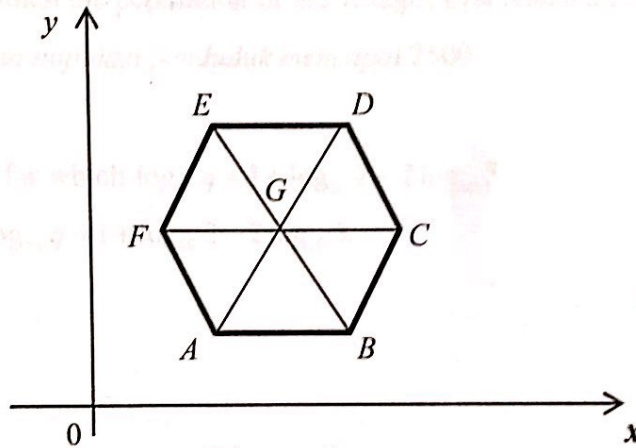


Diagram 1

Rajah 1

Express

Ungkapkan

- (i) \overline{OG} in terms of \underline{a} , \underline{b} and \underline{c} ,
 \overline{OG} dalam sebutan \underline{a} , \underline{b} dan \underline{c} .
- (ii) \overline{CD} in terms of \underline{a} , \underline{b} and \underline{c} ,
 \overline{CD} dalam sebutan \underline{a} , \underline{b} dan \underline{c} .

[3 marks]

[3 markah]

- (b) The position vectors of points P , Q and R relative to an origin O are $\underline{p} + \underline{q}$, $2\underline{p} + 3\underline{q}$ and $4\underline{p} - \underline{q}$ respectively.

Given that $PQRS$ is a parallelogram, find, in terms of \underline{p} and \underline{q} , the position vector of S .

Given that T is a point where position vector relative to O is $5\underline{p}$, show that $OPTR$ is a parallelogram.

Vektor kedudukan bagi titik P , Q dan R relatif kepada asalan, O ialah $\underline{p} + \underline{q}$, $2\underline{p} + 3\underline{q}$ dan $4\underline{p} - \underline{q}$ masing-masing.

Diberi bahawa $PQRS$ ialah sebuah sisi empat selari, cari, dalam sebutan \underline{p} dan \underline{q} , vektor kedudukan S .

Diberi bahawa T ialah titik di mana kedudukan vektor relatif kepada O ialah $5\underline{p}$, tunjukkan $OPTR$ ialah sebuah sisi empat selari.

[3 marks]

[3 markah]



- 2 (a) The population of the villages at the beginning of the year 2000 was 240. The population increased so that, after a period of n years, the new population was $240(1.06)^n$.

Populasi penduduk kampung pada permulaan tahun 2000 ialah 240. Populasi penduduk meningkat sehingga selepas tempoh n tahun, populasi penduduk yang baru ialah $240(1.06)^n$.

Find

Cari

- (i) the population of the villages at the beginning of 2020, [2 marks]
populasi penduduk pada awal tahun 2020, [2 markah]
- (ii) the year in which the population of the villages first reached 2500. [2 marks]
tahun di mana populasi penduduk mencapai 2500. [2 markah]
- (b) Find the value of q for which $\log_{10} q = 1 + \log_{10} 2 - 2 \log_{10} 5$. [2 marks]
Cari nilai q bagi $\log_{10} q = 1 + \log_{10} 2 - 2 \log_{10} 5$. [2 markah]

3. Diagram 3 shows a gift wrapper. The pattern printed on the gift wrapper is a rectangular in shape.
Rajah 3 menunjukkan sehelai kertas pembalut hadiah. Corak yang dicetak pada pembalut hadiah adalah berbentuk segi empat tepat.

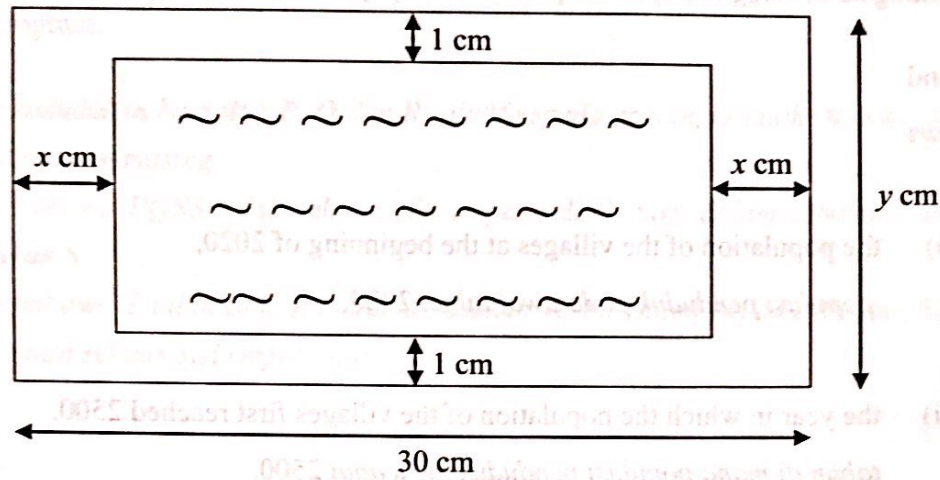


Diagram 3

Rajah 3

The length of the gift wrapper is 30 cm. If the perimeter and area of the rectangular shape are 84 cm and 416 cm^2 respectively, find the values of x and of y . [6 marks]

Panjang pembalut hadiah ialah 30 cm. Jika perimeter dan luas bentuk segi empat tepat masing-masing ialah 84 cm dan 416 cm^2 , cari nilai x dan nilai y . [6 markah]

4 (a) Find the coordinates of the intersections of the curve $y = (1+x)(1-x)$ and the x -axis. [2 marks]

Cari titik-titik persilangan antara lengkung $y = (1+x)(1-x)$ dan paksi- x . [2 markah]

(b) Calculate the area of the region bounded by the curve and the x -axis. [4 marks]

Hitung luas rantau yang dibatasi oleh lengkung itu dan paksi- x . [4 markah]

(c) Calculate the volume generated in terms of π , when this region bounded by the curve, is rotated through 360° about the x -axis. [2 marks]

Hitung isipadu janaan, dalam sebutan π , apabila rantau yang dibatasi oleh lengkung diputarkan melalui 360° pada paksi- x . [2 markah]

- 5 A straight path is made by laying paving slabs end to end. The slabs are laid in order of size and their lengths are in arithmetic progression. Given that the shortest slab is 0.79 metres long, that the longest slab is 1.24 metres long and that the difference in the lengths of adjoining slabs is 0.025 metres.

Laluan lurus dibuat dengan meletakkan lekapan papak hujung ke hujung. Papak dibahagikan mengikut saiz dan panjangnya dalam jujukan janjang aritmetik. Diberi papak terpendek adalah 0.79 meter panjang, papak terpanjang adalah 1.24 meter panjang dan perbezaan panjang papak bersebelahan adalah 0.025 meter.

(a) Calculate

Hitung

- (i) the number of slabs used, [3 marks]
bilangan papak yang digunakan, [3 markah]
- (ii) the length of the path. [2 marks]
panjang laluan tersebut. [2 markah]

- (b) The costs of the slabs are also in arithmetic progression and vary from RM2.16 for the smallest to RM3.24 for the largest. Find the total cost of the slabs in the path. [2 marks]

Kos papak membentuk suatu janjang aritmetik yang mempunyai julat harga antara RM2.16 untuk terkecil hingga RM3.24 untuk yang terbesar. Cari jumlah keseluruhan kos yang diperlukan untuk membina laluan itu. [2 markah]

6 Sketch the graph of $y = |2 \cos x|$ for $0 \leq x \leq 2\pi$. Hence, state the number of solutions of $|3\pi \cos x| = 2x$. [7 marks]

Lakarkan graf $y = |2 \cos x|$ bagi $0 \leq x \leq 2\pi$. Seterusnya, nyatakan bilangan penyelesaian bagi persamaan $|3\pi \cos x| = 2x$. [7 markah]

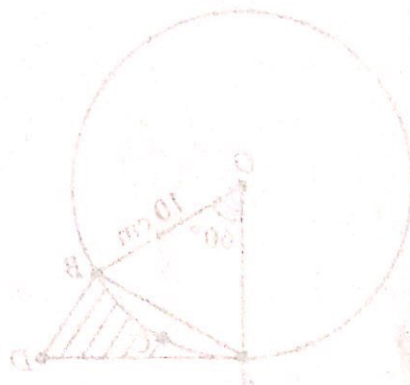


Diagram 7
Rajah 7

[2 marks]
[2 marks]
[1 mark]
[4 marks]

(i) the area of the segment AOB
the area of the sector AOB
the length of the arc AB

Section B
Bahagian B

[40 marks]
[40 markah]

Answer any four questions from this section.
Jawab mana-mana empat soalan daripada bahagian ini.

- 7 Diagram 7 shows three points A , B and C on a circle, centre O and radius 10 cm.
Rajah 7 menunjukkan tiga titik A , B dan C pada sebuah bulatan, berpusat O dan berjejari 10 cm.

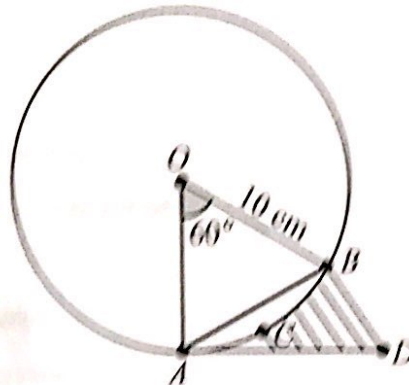


Diagram 7
Rajah 7

The line AD is a tangent to the circle.

Given that angle $AOB = 60^\circ$.

Garis AD ialah tangen kepada bulatan.

Diberi bahawa sudut $AOB = 60^\circ$.

- (a) Give your answer correct to two decimal places, find
Berikan jawapan anda betul kepada dua tempat perpuluhan, cari

- | | |
|--------------------------------------|------------|
| (i) the length of the arc ACB , | [2 marks] |
| panjang lengkok ACB , | [2 markah] |
| (ii) the area of the segment ACB , | [4 marks] |
| luas tembereng ACB , | [4 markah] |

- (b) Given also that the length of AD , equals the length of the arc ACB .
Find the area of the shaded region $ACBD$. [4 marks]

Diberi juga panjang AD sama dengan panjang lengkok ACB .

Cari luas kawasan berlorek $ACBD$. [4 markah]

10.0	8.0	6.0	4.0	2.0	0
0.00	0.47	0.87	1.10	1.24	1

8 Use graph paper to answer this question.

Gunakan kertas graf untuk menjawab soalan ini.

Table 8 shows the values of two variables, p and v , obtained from an experiment.
 p and v are constants.

Jadual 8 menunjukkan nilai-nilai bagi dua pembolehubah p dan v , yang diperolehi daripada satu eksperimen.

p dan v adalah pemalar.

p	2.0	4.0	6.0	8.0	10.0
v	2.24	3.16	3.85	4.47	5.00

Table 8

Jadual 8

(a) Plot $\log_{10} v$ against $\log_{10} p$, using a scale of 2 cm to 0.1 units on both axes.

Hence, draw the line of best fit.

[5 marks]

Plot $\log_{10} v$ melawan $\log_{10} p$ dengan menggunakan skala 2 cm kepada 0.1 unit pada kedua-dua paksi.

Seterusnya, lukis garis lurus penyuaian terbaik.

[5 markah]

(b) Form an equation that relates p and v
Bentukkan persamaan yang menghubungkan p dan v

(i) in terms of logarithm,
dalam bentuk logaritma,

(ii) in terms of indices.
dalam bentuk indeks.

[4 marks]

[4 markah]

(c) Calculate the value of p when $v = 4$.
Hitungkan nilai p apabila $v = 4$.

[1 mark]

[1 markah]

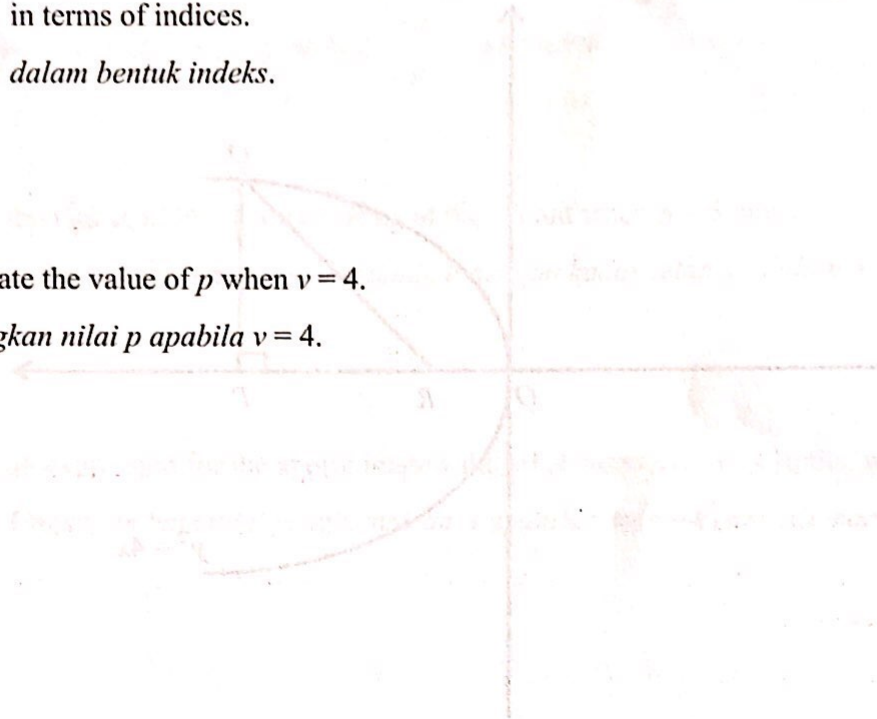


Diagram 9
 Rajah 9

(a) Given that A is the point $(-2, 0)$

Express the area of the triangle OQA in terms of θ and hence show that

14 marks

Area of triangle OQA is $\frac{1}{2} \times 2 \times 2 \sin \theta$

Equating the two expressions for the area of triangle OQA we obtain

$$\frac{1}{2} \times 2 \times 2 \sin \theta = \frac{1}{2} \times 2 \times 2 \cos \theta$$

14 marks

- 9 Diagram 9 shows part of the curve $y^2 = 4x$. The point P is on the x -axis and the point Q is on the curve. PQ is parallel to the y -axis and the length is p unit.

Rajah 9 menunjukkan sebahagian lengkung $y^2 = 4x$. Titik P terletak pada paksi- x dan titik Q terletak pada lengkung. PQ selari dengan paksi- y dan panjangnya ialah p unit.

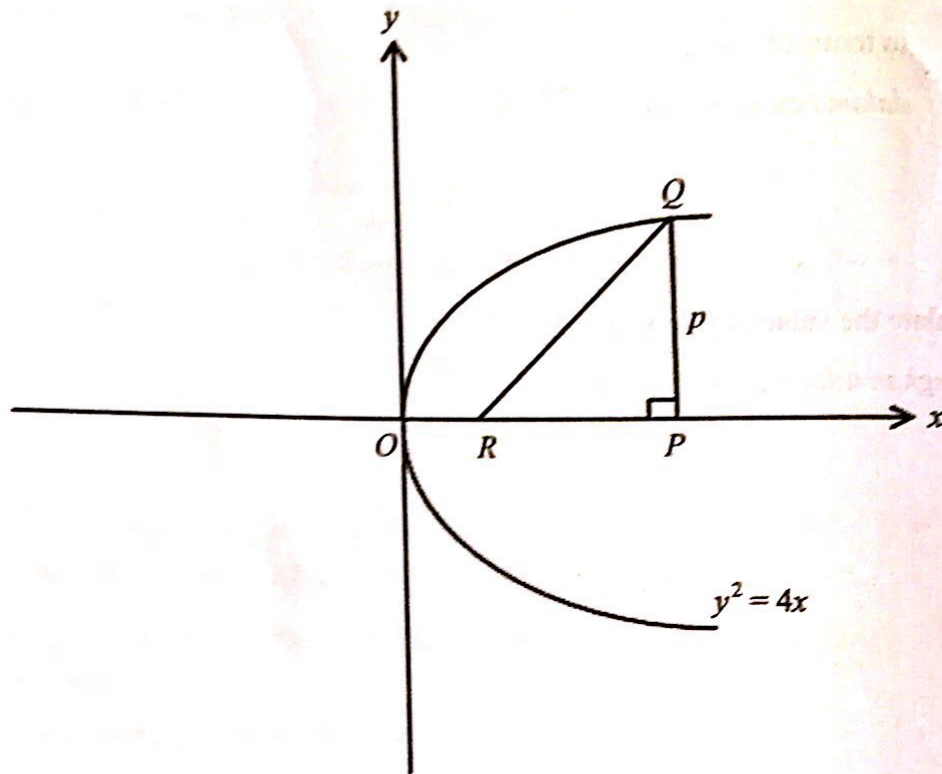


Diagram 9

Rajah 9

- (a) Given that R is the point $(2,0)$.

Express the area, A , of the triangle PQR in terms of p and hence show that $\frac{dA}{dp} = \frac{3p^2}{8} - 1$.

[4 marks]

Diberi bahawa R ialah titik $(2,0)$.

Ungkapkan luas, A , bagi segi tiga PQR dalam sebutan p dan seterusnya tunjukkan

$$\frac{dA}{dp} = \frac{3p^2}{8} - 1.$$

[4 markah]

- (b) The point P moves along the x -axis and the point Q moves along the curve in such a way that remains PQ parallel to the y -axis and p increases at the rate of 0.2 units per second. Use the given expression for $\frac{dA}{dp}$ to find

Titik P bergerak sepanjang paksi- x dan titik Q bergerak sepanjang lengkung dengan keadaan PQ kekal selari dengan paksi- y dan p bertambah dengan kadar tetap 0.2 unit per saat. Gunakan ungkapan yang diberi bagi $\frac{dA}{dp}$ untuk mencari

- (i) the rate at which A is increasing at the instant when $p = 6$ units,
kadar perubahan A yang bertambah dengan kadar tetap apabila $p = 6$ unit, [3 marks]
 [3 markah]
- (ii) an expression for the approximate value of A when $p = (6 + k)$ units, where k is small.
Ungkapan bagi nilai penghampiran A apabila $p = (6 + k)$ unit, di mana k bernilai kecil. [3 marks]
 [3 markah]

10 (a) It is known that for every 10 guavas in a box, 2 are rotten. If a sample of 7 guavas are chosen randomly, calculate the probability that,

Diketahui bahawa untuk setiap 10 biji jambu batu dalam suatu kotak, 2 biji adalah rosak. Satu sampel sebanyak 7 biji jambu batu dipilih secara rawak, hitungkan kebarangkalian bahawa,

- (i) exactly 3 guavas are rotten,
tepat 3 biji jambu batu yang rosak,
- (ii) at least 6 guavas are not rotten.
sekurang-kurangnya 6 biji jambu batu tidak rosak.

[5 marks]

[5 markah]

- (b) The mass of watermelons in the market is normally distributed with a mean of 700 g and standard deviation of 200 g. If a watermelon is chosen randomly, calculate the probability that its mass is

Jisim tembikai di sebuah pasar bertabur secara normal dengan min 700 g dan sisihan piawai 200 g. Jika sebiji tembikai dipilih secara rawak, hitungkan kebarangkalian jisimnya adalah

- (i) less than 300 g,
kurang daripada 300 g,
- (ii) between 300 g and 800 g,
antara 300 g dan 800 g,
- (iii) Hence, if there are 983 watermelons of mass between 300 g and 800 g, calculate the approximate total number of watermelons in the market.

Seterusnya, jika terdapat 983 biji tembikai yang mempunyai jisim antara 300g dan 800 g, hitungkan jumlah bilangan tembikai di pasar itu.

[5 marks]

[5 markah]

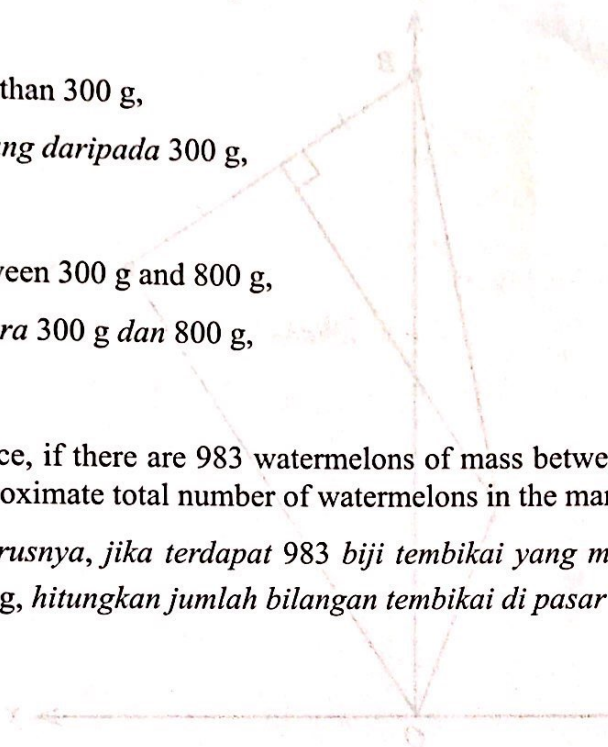


Diagram 11

Rajah 11

11 Diagram 11 shows the quadrilateral $OABC$. The coordinates of A is $(4,8)$ and the length of OA is $\sqrt{80}$ units.

Rajah 11 menunjukkan segi empat $OABC$. Koordinat A ialah $(4,8)$ dan panjang bagi OA ialah $\sqrt{80}$ unit.

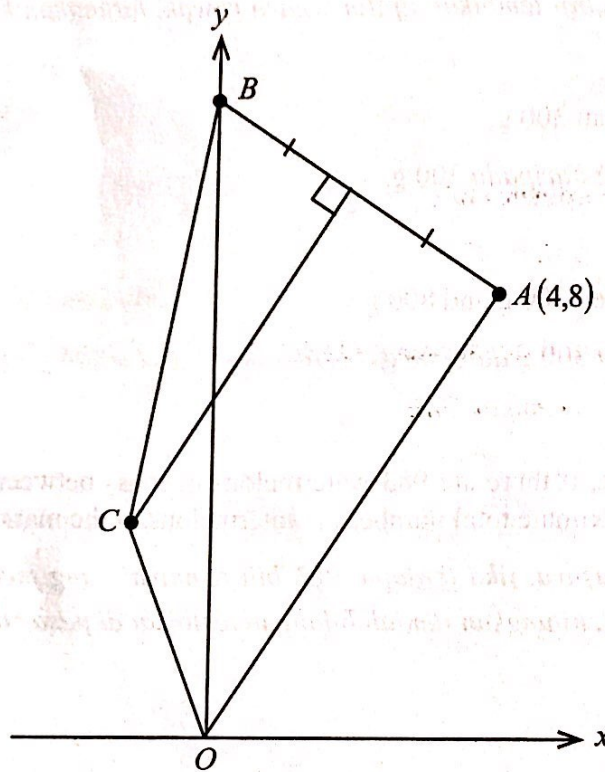


Diagram 11

Rajah 11

(a) AB is perpendicular to OA and B lies on the y -axis.

Find the equation of AB and the coordinates of B .

[3 marks]

AB berserenjang dengan OA dan B terletak pada paksi- y .

Cari persamaan AB dan titik koordinat B .

[3 markah]

- (b) C is the intersection point of line that is parallel to $y + 3x = 5$ and bisector of AB .

C ialah titik persilangan antara garis yang selari dengan $y + 3x = 5$ dan pembahagi dua sama serenjang bagi AB .

Calculate

Hitung

- (i) the coordinates of C , [5 marks]

titik koordinat C , [5 markah]

- (ii) the area of quadrilateral $OABC$. [2 marks]

luas segi empat $OABC$. [2 markah]

Section C
Bahagian C

[20 marks]

[20 markah]

Answer any two questions from this section.

Jawab mana-mana dua soalan daripada bahagian ini.

- 12 Table 12 shows the prices, the price indices and weightages of four items, *P*, *Q*, *R* and *S*, used in the production to make a tin of biscuits.

Jadual 12 menunjukkan harga, indeks harga dan pemberat bagi empat bahan *P*, *Q*, *R* dan *S*, yang digunakan untuk membuat satu tin biskut.

Item Bahan	Price index in the year 2016 based on the year 2013 <i>Indeks harga pada tahun 2016 berasaskan tahun 2013</i>	Change in price index from the year 2016 to the year 2018 <i>Perubahan indeks harga dari tahun 2016 ke tahun 2018</i>	Weightage Pemberat
<i>P</i>	110	10% increase <i>Menokok 10%</i>	2
<i>Q</i>	120	Unchange <i>Tidak berubah</i>	4
<i>R</i>	<i>x</i>	5% decrease <i>Meyus... 5%</i>	3
<i>S</i>	140	Unchange <i>Tidak berubah</i>	1

Table 12
Jadual 12

(a) Calculate

Hitung

(i) the price of item P in the year 2013 if its price in the year 2016 is RM5.50.
harga bahan P pada tahun 2013 jika harganya pada tahun 2016 ialah RM5.50.

(ii) the price of item S in the year 2016 if its price in the year 2013 is RM3.50.
harga bahan S pada tahun 2016 jika harganya pada tahun 2013 ialah RM3.50.

[3 marks]

[3 markah]

(b) The composite index for the cost of making a tin of biscuits in the year 2016 based on the year 2013 is 115.5.

Find the value of x .

[2 marks]

Indeks gubahan bagi kos membuat satu tin biskut pada tahun 2016 berasaskan tahun 2013 ialah 115.5.

Cari nilai x .

[2 markah]

(c) Hence, calculate the composite index for the cost of making a tin of biscuits in the year 2018 based on the year 2013.

[3 marks]

Seterusnya, hitung indeks gubahan bagi kos membuat satu tin biskut pada tahun 2018 berasaskan tahun 2013.

[3 markah]

(d) Calculate the cost of making a tin of biscuits in the year 2018 if the corresponding cost in the year 2013 is RM15.

[2 marks]

Hitung kos membuat satu tin biskut pada tahun 2018 jika kos sepadan pada tahun 2013 ialah RM15.

[2 markah]

- 13 Use the graph paper to answer this question.

Guna kertas graf untuk menjawab soalan ini.

Nazim has an allocation of RM250 to buy x kg of prawns and y kg of fish. The total mass of the commodities is not less than 20 kg. The mass of prawns is at most two times the mass of fish. The price of 1 kg of prawns is RM15 and the price of 1 kg of fish is RM8.

Nazim mempunyai peruntukan sebanyak RM250 untuk membeli x kg udang dan y kg ikan. Jumlah jisim kedua-dua barangan itu tidak kurang daripada 20 kg. Jisim udang adalah selebih-lebihnya dua kali jisim ikan. Harga 1 kg udang ialah RM15 dan harga 1 kg ikan ialah RM8.

- (a) Write three inequalities, other than $x \geq 0$ and $y \geq 0$, which satisfy all the above constraints. [3 marks]

Tulis tiga ketaksamaan, selain daripada $x \geq 0$ dan $y \geq 0$, yang memenuhi semua kekangan di atas. [3 markah]

- (b) Hence, using a scale of 2 cm to 5 kg on both axes, construct and shade the region R which satisfies all the above constraints. [3 marks]

Menggunakan skala 2 cm kepada 5 kg pada kedua-dua paksi, bina dan lorek rantau R yang memenuhi semua kekangan di atas. [3 markah]

(c) If Nazim buys 10 kg of fish, what is the maximum amount of money that could be remain from his allocation? [4 marks]

Jika Nazim membeli 10 kg ikan, berapakah jumlah baki wang maksimum yang masih tinggal daripada peruntukannya itu? [4 markah]

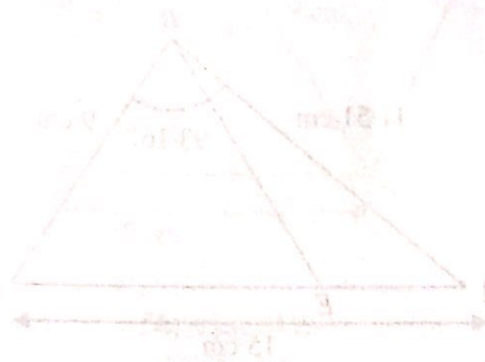


Diagram 1.1
Rajah 1.1

Diagram 1.1 shows a triangle with a horizontal base of length 15 cm. A vertical dashed line from the top vertex to the base is labeled 9 cm. The base is divided into two segments of 10 cm and 5 cm.

(a) Find
(i) the area of the triangle.

(ii) the length, in cm, of the altitude from the top vertex to the base.

(iii) the area, in cm², of the triangle formed by the top vertex and the segment of the base of length 10 cm.

14 Solution by scale drawing will not be accepted.

Penyelesaian secara lukisan berskala tidak akan diterima.

Diagram 14.1 shows a triangle ABC . Point E lies on the straight line AC .

Rajah 14.1 menunjukkan segi tiga ABC . Titik E terletak di atas garis lurus AC .

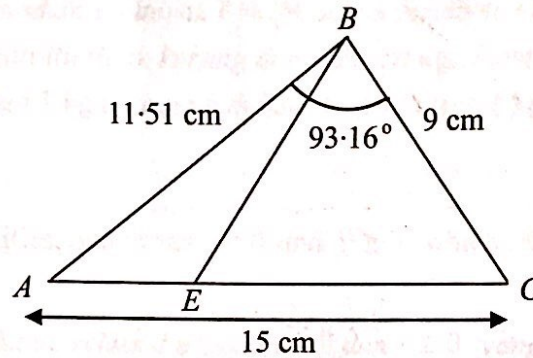


Diagram 14.1

Rajah 14.1

It is given that $\angle ABC = 93.16^\circ$, $AB = 11.51$ cm, $AC = 15$ cm and $EB = BC = 9$ cm.

Diberi bahawa $\angle ABC = 93.16^\circ$, $AB = 11.51$ cm, $AC = 15$ cm dan $EB = BC = 9$ cm.

(a) Find

Cari

- (i) $\angle ACB$,
- (ii) the length, in cm, of EC ,
panjang, dalam cm, EC ,
- (iii) the area, in cm^2 , $\triangle ABE$.
luas, dalam cm^2 , $\triangle ABE$.

[7 marks]

[7 markah]

(b) In Diagram 14.2, $\triangle DBC$ is the image of $\triangle EBC$ under the reflection on the line BC .

Dalam Rajah 14.2, $\triangle DBC$ ialah imej kepada $\triangle EBC$ di bawah pantulan pada garis BC .

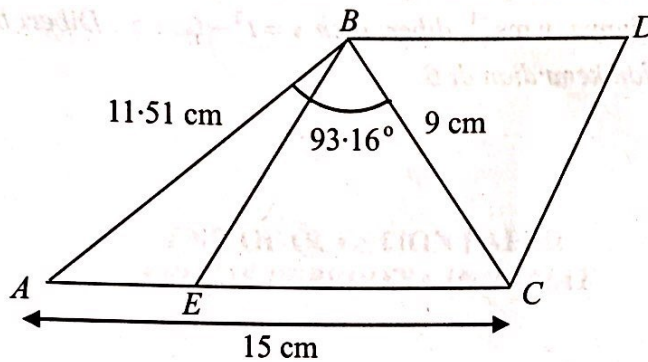


Diagram 14.2

Rajah 14.2

Find the length, in cm, of AD .

[3 marks]

Cari panjang, dalam cm, bagi AD .

[3 markah]

15 A particle moves along a straight line, where t is the time, in seconds, after passing through O . Its velocity, $v \text{ ms}^{-1}$, is given by $v = t^2 - 6t + 5$. It is given that the particle stops instantaneously at A and then at B .

Suatu zarah bergerak di sepanjang suatu garis lurus, dengan keadaan t ialah masa, dalam saat, selepas melalui O . Halajunya, $v \text{ ms}^{-1}$, diberi oleh $v = t^2 - 6t + 5$. Diberi bahawa zarah tersebut berhenti seketika, di A dan kemudian di B .

Find

Cari

(a) the distance AB ,

jarak AB ,

[4 marks]

[4 markah]

(b) the total distance travelled by the particle in the first 5 seconds after passing through O .

[2 marks]

jumlah jarak yang dilalui oleh zarah itu dalam 5 saat pertama selepas melalui titik O .

[2 markah]

- (c) Given that C is the point at which the particle has zero acceleration, determine whether C is nearer to O or to B . [4 marks]

Diberi C ialah titik di mana zarah mempunyai pecutan sifar, tentukan sama ada C lebih hampir kepada O atau B . [4 markah]

END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT