

MATEMATIK TAMBAHAN

Kertas 2

3472/2

NO. KAD PENGENALAN

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	-	<input type="text"/>						
----------------------	----------------------	----------------------	----------------------	---	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

ANGKA GILIRAN

<input type="text"/>						
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

NAMA :

TINGKATAN :

Kertas peperiksaan ini mengandungi 40 halaman bercetak.

[Lihat halaman sebelah

5

MODUL PINTAS TINGKATAN LIMA

2 JAM 30 MINIT

ARAHAN :

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

Untuk Kegunaan Pemeriksa

Untuk Kegunaan Pemeriksa				
Kod Pemeriksa				
Bahagian	Soalan	Soalan Dijawab	Markah Penuh	Markah Diperoleh (Untuk Kegunaan Pemeriksa)
A	1		8	
	2		7	
	3		7	
	4		7	
	5		7	
	6		8	
	7		6	
B	8		10	
	9		10	
	10		10	
	11		10	
	12		10	
C	13		10	
	14		10	
	15		10	
	Jumlah			

Jumlah

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

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

**SENARAI RUMUS
LIST OF FORMULAE**

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

$$2 \quad \log_a b = \frac{\log_c b}{\log_c a}$$

$$3 \quad T_n = a + (n-1)d$$

$$4 \quad T_n = ar^{n-1}$$

$$5 \quad S_n = \frac{n}{2} [2a + (n-1)d]$$

$$6 \quad S_n = \frac{a(r^n - 1)}{r-1} = \frac{a(1-r^n)}{1-r}, r \neq 1$$

$$7 \quad Z = \frac{X - \mu}{\sigma}$$

$$8 \quad P(X=r) = {}^n C_r p^r q^{n-r}, p+q=1$$

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

$$10 \quad {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$11 \quad I = \frac{Q_1}{Q_0} \times 100$$

$$12 \quad \bar{I} = \frac{\sum W_i I_i}{\sum W_i}$$

$$13 \quad \sin^2 A + \cos^2 A = 1$$

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

$$14 \quad \sec^2 A = 1 + \tan^2 A$$

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

$$15 \quad \operatorname{kosek}^2 A = 1 + \operatorname{kot}^2 A$$

$$\operatorname{cosec}^2 A = 1 + \operatorname{cot}^2 A$$

$$16 \quad \sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

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

$$17 \quad \cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

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

$$18 \quad \tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

$$19 \quad \sin 2A = 2 \sin A \cos A$$

$$\sin 2A = 2 \sin A \cos A$$

$$20 \quad \begin{aligned} \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \end{aligned}$$

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

$$21 \quad \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$22 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$23 \quad \begin{aligned} a^2 &= b^2 + c^2 - 2bc \cos A \\ a^2 &= b^2 + c^2 - 2bc \cos A \end{aligned}$$

$$24 \quad \begin{aligned} \text{Luas segi tiga / Area of triangle} \\ &= \frac{1}{2} ab \sin C \end{aligned}$$

HALAMAN KOSONG
BLANK PAGE

[Pembacaan]

[Pembacaan]

Sebuah sifat yang dikenali
dalam matematik

Maka setiap dua buah titik T dan R pada sebuah sifat yang dikenali dalam matematik

(a)



I dapatkan
Jangan

$$\left(\frac{e}{z}\right) = \overline{\lambda} \tan\left(\frac{\pi}{z}\right) = \overline{\lambda} \alpha, (\alpha \in \mathbb{C}) \text{ untuk } z \neq 0 \text{ dan } z \neq i\pi/2$$

$$\left(\frac{e}{z}\right) = \overline{\lambda} \tan\left(\frac{\pi}{z}\right) = \overline{\lambda} \alpha, (\alpha \in \mathbb{C}) \text{ untuk } z \neq 0 \text{ dan } z \neq i\pi/2$$

titik jadi tambahan adalah $\pi/2$ (a)
maka nilai α adalah

$$(1, 0) \text{ atau } \overline{Q} = 1$$

$$(2, 0) \text{ atau } \overline{Q}$$

$$(3, 1) \text{ atau } \overline{Q} = 3i$$

$$(0, 1) \text{ atau } \overline{Q}$$

[Pembacaan]
[Pembacaan]

\overline{Q} merupakan titik nol dan titik $i\pi/2$ dan
sejajar dengan buah titik nol dan titik $i\pi/2$

\overline{Q} merupakan titik nol dan titik $i\pi/2$ dan
sejajar dengan buah titik nol dan titik $i\pi/2$

[Pembacaan]
[Pembacaan]

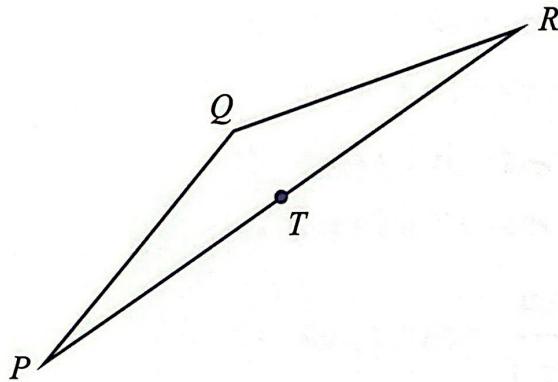
[Lihat halaman sebelah]

Bahagian A
Section A

[50 markah]
[50 marks]

Jawab semua soalan.
Answer all questions.

- 1 Rajah 1 menunjukkan sebuah segi tiga PQR . T ialah titik tengah garis lurus PR .
Diagram 1 shows a triangle PQR . T is the midpoint of the straight line PR .



Rajah 1
Diagram 1

Diberi bahawa koordinat P ialah $(2, -1)$, $\vec{PQ} = \begin{pmatrix} 4 \\ 3 \end{pmatrix}$ dan $\vec{TR} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$.

It is given that coordinates P is $(2, -1)$, $\vec{PQ} = \begin{pmatrix} 4 \\ 3 \end{pmatrix}$ and $\vec{TR} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$.

- (a) Tunjukkan koordinat bagi titik:

Show that the coordinates of the point:

(i) Q ialah $(6, 2)$.

Q is $(6, 2)$.

(ii) R ialah $(12, 3)$.

R is $(12, 3)$.

[4 markah]
[4 marks]

- (b) Tentukan vektor unit dalam arah vektor \vec{QT} .

Berikan jawapan anda dalam bentuk surd yang teringkas.

Determine the unit vector in the direction of vector \vec{QT} .

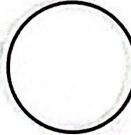
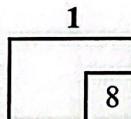
Give your answer in the simplest surd form.

[4 markah]
[4 marks]

Jawapan / Answer : ~~sejati~~-~~sejati~~ dendaa laad ini jadi sejati bila dia cuba mendekati... (an)

(ii) $\left(\frac{1}{2} \text{ gol } \delta - \frac{\epsilon}{\delta} \text{ gol } + 4 \frac{1}{2} \text{ gol}\right) \frac{1}{\delta} = \frac{1}{2} \text{ gol}$ की तरफ

(b)



[Lihat halaman sebelah

- 2 (a) Diberi dua panjang pepenjuru bagi sebuah layang-layang $PQRS$ masing-masing ialah $(2 + \sqrt{3})$ cm dan $(4 + \sqrt{27})$ cm.

Hitung luas, dalam cm^2 , bagi layang-layang $PQRS$. Berikan jawapan anda dalam bentuk $a + b\sqrt{3}$ dengan keadaan a dan b ialah nombor nisbah.

Given that the length of the two diagonals of a kite $PQRS$ is $(2 + \sqrt{3})$ cm and $(4 + \sqrt{27})$ cm respectively.

Calculate the area, in cm^2 , of the kite $PQRS$. Give your answer in the form of $a + b\sqrt{3}$ where a and b are rational numbers.

[3 markah]
[3 marks]

- (b) Diberi $\log_a P = \frac{1}{3} (\log_a 24 - \log_a \frac{3}{8} - 6 \log_a 3)$, cari nilai P .

Seterusnya, cari nilai $\log_a P$ apabila $a = \frac{2}{3}$.

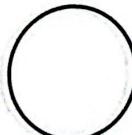
Given that $\log_a P = \frac{1}{3} (\log_a 24 - \log_a \frac{3}{8} - 6 \log_a 3)$, find the value of P .

Hence, find the value of $\log_a P$ when $a = \frac{2}{3}$.

[4 markah]
[4 marks]

Jawapan / Answer :

(a)



[Lihat halaman sebelumnya]

3472/2

2

7

[Lihat halaman sebelah

- 3 Hasil tambah digit bagi satu nombor yang mempunyai tiga digit, xyz , ialah 11, dengan keadaan x , y dan z masing-masing mewakili digit pada tempat ratus, puluh dan sa dalam nombor tersebut. Hasil tambah digit ratus dengan 2 kali digit puluh adalah sama dengan digit sa. Jika digit ratus saling tukar tempat dengan digit sa, nombor baharu itu adalah 46 lebih daripada 5 kali nombor asal, tunjukkan bahawa $95z = 499x + 40y + 46$. Kemudian, cari nombor tiga-digit yang asal itu.

The sum of digits of a three-digit number, xyz , is 11 where x , y and z each represents the digit in hundreds, tens and ones for the number. The hundreds digit plus 2 times the tens digit is equal to the ones digit. If the digits in hundreds and ones are exchanged places, the new number is 46 more than 5 times of the original number, show that $95z = 499x + 40y + 46$. Hence, find the original three-digit number.

[7 markah]

[7 marks]

Jawapan / Answer :

3

7



- 4 (a) Sebutan ketiga, keenam dan kedua belas suatu janjang aritmetik adalah sebutan berturutan suatu janjang geometri.

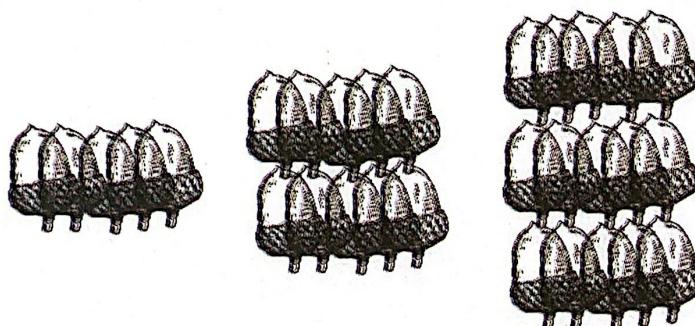
Cari nisbah sepunya bagi janjang geometri itu.

The third, sixth and twelfth terms of an arithmetic progression are consecutive terms of a geometric progression.

Find the common ratio of the geometric progression.

[4 markah]
[4 marks]

(b)



Petunjuk :
Key

= 5 akorn
5 acorns

Rajah 2
Diagram 2

Seekor tupai ingin menyimpan lebih daripada 1 000 biji akorn sebagai makanannya untuk musim sejuk. Rajah 2 menunjukkan simpanannya untuk 3 hari yang pertama. Dia meneruskan simpanannya dalam bentuk janjang aritmetik.

Cari jumlah akorn yang ada dalam simpanannya pada hari terakhir apabila jumlahnya telah mencukupi.

A squirrel wanted to store more than 1 000 acorns as its food for the winter. Diagram 2 shows its stock for the first 3 days. It continued his stock in the form of an arithmetic progression.

Find the total number of acorns it had in its stock on the last day when the number was sufficient.

[3 markah]
[3 marks]

Jawapan / Answer : (a) Dari gambar di sebelah kiri, kita dapatkan $\angle A = 60^\circ$, $\angle B = 70^\circ$ dan $\angle C = 50^\circ$.
 (a) $\angle A + \angle B + \angle C = 180^\circ$

Dari teorema sumbu-sumbu, $\angle A = 60^\circ$, $\angle B = 70^\circ$ dan $\angle C = 50^\circ$.
 Jadi $\angle A + \angle B + \angle C = 180^\circ$.



(b)

Dari teorema sumbu-sumbu, $\angle A + \angle B + \angle C = 180^\circ$.
 Dalam segitiga ABC, $\angle A = 60^\circ$, $\angle B = 70^\circ$ dan $\angle C = 50^\circ$.
 Jadi $\angle A + \angle B + \angle C = 180^\circ$.

Bentuk geometri yang mempunyai sudut sumbu-sumbu 60° adalah

(a) Segitiga dengan sudut-sudut 60° , 70° dan 50° .
 (b) Segitiga dengan sudut-sudut 60° , 70° dan 60° .

Bentuk geometri yang mempunyai sudut sumbu-sumbu 60° adalah

(a) Segitiga dengan sudut-sudut 60° , 70° dan 50° .
 (b) Segitiga dengan sudut-sudut 60° , 70° dan 60° .

Bentuk geometri yang mempunyai sudut sumbu-sumbu 60° adalah

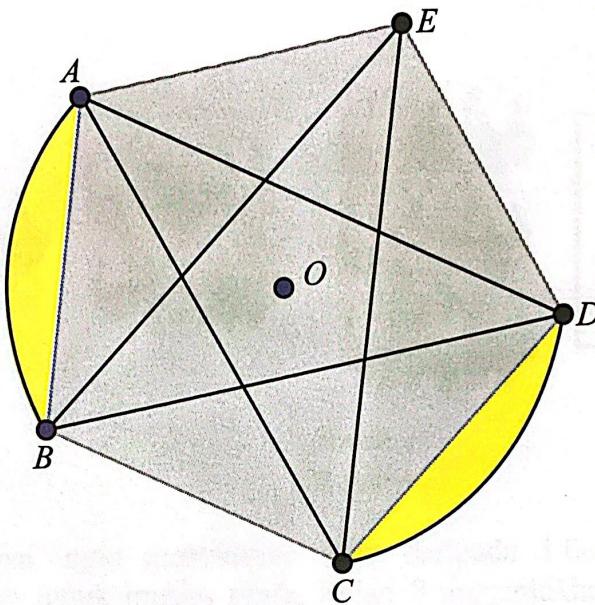
(a) Segitiga dengan sudut-sudut 60° , 70° dan 50° .
 (b) Segitiga dengan sudut-sudut 60° , 70° dan 60° .

4

7

- 5 Rajah 3 menunjukkan satu logo berbentuk pentagon sekata $ABCDE$ yang terterap dalam satu bulatan berjejari 5 cm yang berpusat di O . Untuk melengkapkan logo tersebut, tali ikatan berwarna hitam diperlukan untuk membuat bintang pentagon dan dua lengkok bulatan tersebut.

Diagram 3 shows a logo in a regular pentagon shape $ABCDE$ inscribed in a circle of radius 5 cm with centre O . To complete the logo, a black tie rope is needed to make the pentagon star and two arcs of the circle.



Rajah 3
Diagram 3

Diberi $\pi = 3.142$.

Given $\pi = 3.142$.

- (a) Cari, dalam radian, sudut AOB .

Find, in radians, angle AOB .

[1 markah]

[1 mark]

- (b) Tentukan sama ada tali ikatan hitam sepanjang 0.6 meter mencukupi untuk membuat logo tersebut.

Determine if a 0.6 metre long black tie rope is sufficient to make the logo.

[4 markah]

[4 marks]

- (c) Tembereng AB dan CD akan dicat dengan warna kuning.

Kira, dalam cm^2 , luas kawasan yang perlu dicat.

Segments AB and CD will be painted with yellow paint.

Calculate, in cm^2 , the area to be painted.

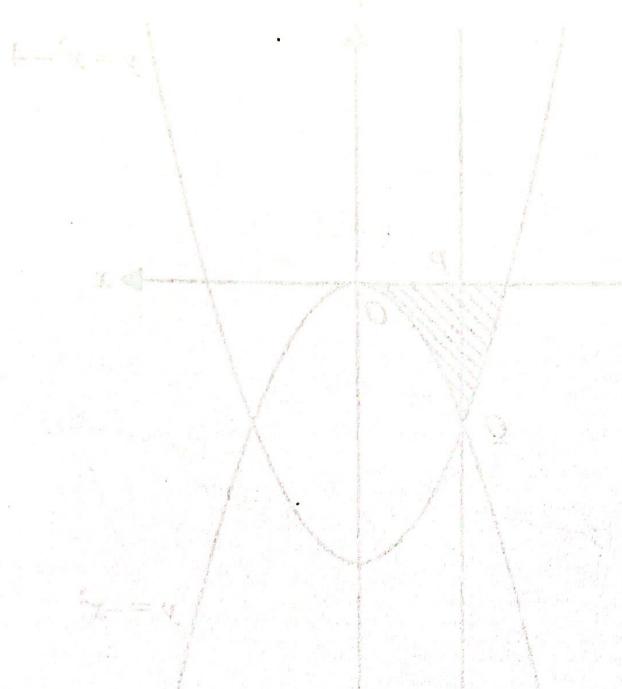
[2 markah]

[2 marks]

Jawapan / Answer :

- (a) $\frac{1}{2} \pi r^2$ (b) $\frac{\pi r^2}{4}$ (c) $\frac{\pi r^2}{2}$

(b)



(c)

Keluaran 2
Dalam 2

berlaku pada segitiga ABC yang bersudut tumpul di A. Dua sisi yang bersempadan dengan sudut tumpul adalah sisi BC dan AC.

Keluaran 3
Dalam 3

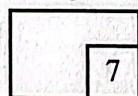
Luas segitiga ABC yang bersudut tumpul pada titik C adalah $\frac{1}{2} \times 10 \times 12 = 60$. Luas segitiga ABC yang bersudut tumpul pada titik A adalah $\frac{1}{2} \times 10 \times 12 = 60$. Jadi, luas segitiga ABC adalah $60 + 60 = 120$.

Keluaran 4
Dalam 4

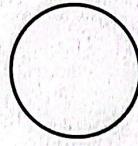
3472/2

[Lihat halaman sebelah]

5

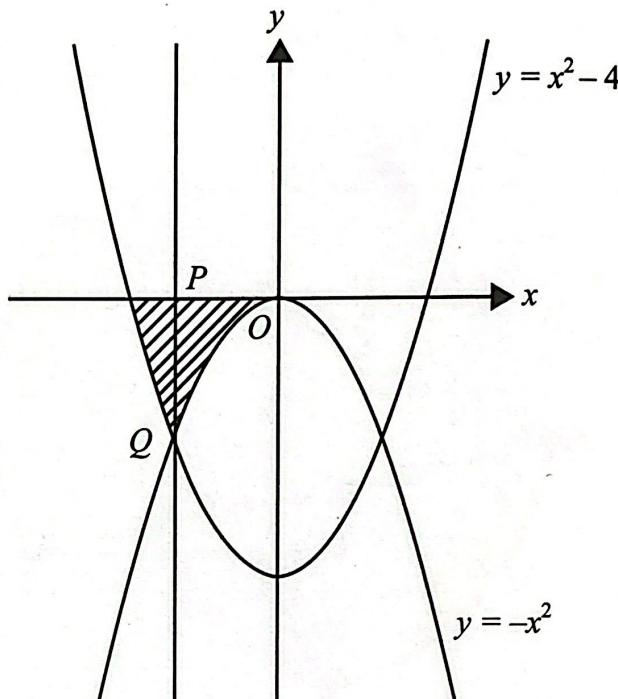


7



- 6 Rajah 4 menunjukkan dua lengkung $y = -x^2$ dan $y = x^2 - 4$ bersilang pada titik Q . Garis lurus PQ selari dengan paksi- y .

Diagram 4 shows two curves $y = -x^2$ and $y = x^2 - 4$ are intersecting at point Q. The straight line PQ is parallel to the y-axis.



Rajah 4
Diagram 4

Cari
Find

- (a) persamaan garis lurus PQ ,
the equation of the straight line PQ ,

[2 markah]
[2 marks]

- (b) luas, dalam unit², bagi rantau berlorek,
area, in unit², of the shaded region,

[3 markah]
[3 marks]

- (c) isi padu yang dijanakan apabila rantau yang dibatasi oleh lengkung $y = -x^2$ dan lengkung $y = x^2 - 4$ diputarkan melalui 180° pada paksi- y .
the volume generated when the region bounded by the curves $y = -x^2$ and $y = x^2 - 4$ is rotated 180° about the y-axis.

[3 markah]
[3 marks]

Jawapan / Answer :

(a)

$$\text{Jika } 2 \geq x \geq 0 \text{ dan } \begin{cases} 3 \text{ kepada } 5 \\ x \text{ kepada } 1 \end{cases} \Rightarrow 1 \leq 3x \leq 5 \text{ dan } 1 \leq x \leq 5 \text{ (i) Pembiakan selisih had}} \\ \text{Jika } 2 \geq x \geq 0 \text{ dan } \begin{cases} 3 \text{ kepada } 7 \\ x \text{ kepada } 1 \end{cases} \Rightarrow 1 \leq 7x \leq 21 \text{ dan } 1 \leq x \leq 3 \text{ (ii) Pembiakan selisih had}}$$

(b)

$$\text{Jika } 5 \geq x \geq 0 \text{ dan } 0 \leq x \leq \begin{cases} 2 \text{ kepada } 5 \\ x \text{ kepada } 1 \end{cases} \Rightarrow 0 \leq 5x \leq 10 \text{ dan } 0 \leq x \leq 2 \\ \text{Jika } 5 \geq x \geq 0 \text{ dan } 0 \leq x \leq \begin{cases} 2 \text{ kepada } 5 \\ x \text{ kepada } 3 \end{cases} \Rightarrow 0 \leq 5x \leq 15 \text{ dan } 0 \leq x \leq 3$$

(c)

6

8

[Lihat halaman sebelah

- 7 (a) Tunjukkan bahawa $\frac{2 \operatorname{kosek} x}{\operatorname{kot} x + \tan x} = 2 \cos x$.

Show that $\frac{2 \operatorname{cosec} x}{\operatorname{cot} x + \tan x} = 2 \cos x$.

[2 markah]
[2 marks]

- (b) (i) Kemudian, lakarkan graf $y = 1 - \left| \frac{2 \operatorname{kosek} x}{\operatorname{kot} x + \tan x} \right|$ bagi $0 \leq x \leq 2\pi$.

Hence, sketch the graph of $y = 1 - \left| \frac{2 \operatorname{cosec} x}{\operatorname{cot} x + \tan x} \right|$ for $0 \leq x \leq 2\pi$.

- (ii) Seterusnya, dengan menggunakan paksi yang sama, lukis satu garis lurus yang sesuai untuk mencari bilangan penyelesaian bagi persamaan $2 - \left| \frac{2 \operatorname{kosek} x}{\operatorname{kot} x + \tan x} \right| - x = 0$ untuk $0 \leq x \leq 2\pi$.

Nyatakan persamaan garis lurus itu dan bilangan penyelesaiannya.

Hence, using the same axes, draw a suitable straight line to find the number of solutions to the equation $2 - \left| \frac{2 \operatorname{cosec} x}{\operatorname{cot} x + \tan x} \right| - x = 0$, for $0 \leq x \leq 2\pi$.

State the equation of the straight line and the number of solutions.

[4 markah]
[4 marks]

Jawapan / Answer :

(a)



(b) (i) *Industri*

• mengadai

• mewujud

[Berdaripada 9]

[Pada ruang 9]

• ini ciri-ciri yang diperlukan dalam suatu teknologi dan teknologi yang diperlukan untuk mendekati sasaran.

• ilmu & pengetahuan ilmu dan teknologi (i)

• teknologi berdasarkan teknologi ilmu

• teknologi yang berfungsi menghasilkan teknologi kimia (O)

• teknologi yang berfungsi menghasilkan teknologi kimia

• teknologi yang berfungsi menghasilkan teknologi kimia (ii)

• teknologi yang berfungsi menghasilkan teknologi kimia (iii)

• teknologi yang berfungsi menghasilkan teknologi kimia (iv)

• teknologi yang berfungsi menghasilkan teknologi kimia (v)

• teknologi yang berfungsi menghasilkan teknologi kimia (vi)

• teknologi yang berfungsi menghasilkan teknologi kimia (vii)

• teknologi yang berfungsi menghasilkan teknologi kimia (viii)

• teknologi yang berfungsi menghasilkan teknologi kimia (ix)

• teknologi yang berfungsi menghasilkan teknologi kimia (x)

• teknologi yang berfungsi menghasilkan teknologi kimia (xi)

• teknologi yang berfungsi menghasilkan teknologi kimia (xii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xiii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xiv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xvi)

• teknologi yang berfungsi menghasilkan teknologi kimia (xvii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xviii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xix)

• teknologi yang berfungsi menghasilkan teknologi kimia (xx)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxi)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxiii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxiv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxvi)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxvii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxviii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxix)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxx)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxi)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxiii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxiv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxvi)

$p \text{ O}_2 < p \text{ O}_2 \text{ set } + 2$	$p \text{ O}_2 \text{ set } + 2 > p \text{ O}_2 <$	$p \text{ O}_2 > p \text{ O}_2 \text{ set } + 2$	$p \text{ O}_2 < p \text{ O}_2 \text{ set } - 2$
0.1	0.2	0.3	0.4

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxvii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxviii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xxxix)

• teknologi yang berfungsi menghasilkan teknologi kimia (xl)

• teknologi yang berfungsi menghasilkan teknologi kimia (xli)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xliii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xliii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlii)

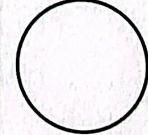
• teknologi yang berfungsi menghasilkan teknologi kimia (xliii)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlv)

• teknologi yang berfungsi menghasilkan teknologi kimia (xlii)

7

6



[Lihat halaman sebelah]

Bahagian B
Section B

[30 markah]
[30 marks]

Jawab mana-mana tiga soalan daripada bahagian ini.
Answer any three questions from this section.

- 8 (a) Sebiji dadu adil dilambung 4 kali.

A fair dice is tossed 4 times.

- (i) Cari kebarangkalian mendapat skor 2 hanya sekali.

Find the probability of getting score 2 exactly once.

- (ii) Dalam satu permainan tertentu, peserta yang mendapat nombor ganjil dianggap sebagai berjaya.

Cari kebarangkalian seorang peserta berjaya sekurang-kurangnya 3 kali.

In a certain game, a participant who obtains an odd number is considered successful.

Find the probability of a participant being successful at least 3 times.

[5 markah]

[5 marks]

- (b) Jisim buah oren yang dijual di Pasar Raya Besar A adalah bertaburan secara normal dengan min 340 g dan sisihan piawai 30 g. Jadual 1 menunjukkan jisim dan keuntungan hasil jualan buah oren itu.

The mass of the oranges sold in Hypermarket A is normally distributed with mean of 340 g and a standard deviation of 30 g. Table 1 shows the mass and its profit when the oranges are sold.

Jisim Mass	< 280 g	$280 \text{ g} \leq m \leq 350 \text{ g}$	$> 350 \text{ g}$
Keuntungan (RM) Profit (RM)	0.30	0.50	1.00

Jadual 1
Table 1

- (i) Cari peratusan buah oren yang dijual dengan keuntungan yang paling banyak.

Find the percentage of oranges that are sold with the highest amount of profit.

- (ii) Cari kebarangkalian sebiji oren yang dipilih mempunyai keuntungan yang paling kurang.

Find the probability that a selected orange has the least profit.

[5 markah]

[5 marks]

Jawapan / Answer: Untuk jawapan ini, tunjukkan kira-kira dan diluluskan pada ruang jawapan yang diberikan.

(a) (i) $\frac{1}{2} \times 20 = 10$

Peraturan kali dengan 20 bagi menyelesaikan operasi bagi setiap baris dan setiap baris bagi setiap baris dengan menggunakan teknik eliminasi dan substitusi. Setiap operasi dilakukan pada setiap baris dan setiap baris dengan menggunakan teknik eliminasi dan substitusi.

Peraturan kali dengan 20 bagi menyelesaikan setiap baris dengan menggunakan teknik eliminasi dan substitusi. $(3 - 2) \times 20$ untuk mengeliminasi x dari setiap baris.

Q4	Q5	Q6	Q7	Q8	Q9	Q10
Q2	Q4	Q6	Q8	Q10	Q2	Q4

Setiap baris dikalikan dengan 20. Σ hasil.

Baris 1 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 2 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 3 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 4 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 5 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 6 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 7 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 8 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 9 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 10 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 11 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 12 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 13 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 14 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 15 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 16 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 17 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 18 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 19 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 20 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 21 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 22 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 23 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 24 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 25 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 26 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 27 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 28 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 29 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 30 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 31 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 32 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 33 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 34 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 35 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

Baris 36 dikalikan dengan 20. Σ hasil. $(10 - 2) \times 20 = 160$. Σ hasil = 160.

Baris 37 dikalikan dengan 20. Σ hasil. $(10 - 4) \times 20 = 120$. Σ hasil = 120.

Baris 38 dikalikan dengan 20. Σ hasil. $(10 - 6) \times 20 = 80$. Σ hasil = 80.

Baris 39 dikalikan dengan 20. Σ hasil. $(10 - 8) \times 20 = 40$. Σ hasil = 40.

Baris 40 dikalikan dengan 20. Σ hasil. $(10 - 10) \times 20 = 0$. Σ hasil = 0.

8

10

[Lihat halaman sebelah

- 9 Guna kertas graf yang disediakan pada halaman 22 untuk menjawab soalan ini.
Use the graph paper provided on page 22 to answer this question.

Jadual 2 menunjukkan nilai-nilai bagi dua pemboleh ubah x dan y yang diperoleh daripada satu eksperimen. Pemboleh ubah x dan y dihubungkan oleh persamaan $4a^2x = (y - b)^2$, dengan keadaan a dan b ialah pemalar.

Table 2 shows the values of two variables, x and y obtained from an experiment. The variables x and y are related by the equation $4a^2x = (y - b)^2$, where a and b are constants.

x	4	9	16	25	36	49
y	3.2	3.7	4.1	4.5	4.9	5.4

Jadual 2

Table 2

- (a) Plot graf y melawan \sqrt{x} dengan menggunakan skala 2 cm kepada 1 unit pada paksi- \sqrt{x} dan 2 cm kepada 0.5 unit pada paksi- y . Seterusnya, lukiskan garis lurus penyuaiannya terbaik.

Plot the graph of y against \sqrt{x} by using a scale of 2 cm to 1 unit on the \sqrt{x} -axis and 2 cm to 0.5 unit on the y -axis. Hence, draw the line of best fit.

[4 markah]

[4 marks]

- (b) Menggunakan graf di 9(a), cari

Using the graph in 9(a), find

- (i) nilai a dan nilai b ,

the value of a and of b ,

- (ii) nilai y apabila $x = 30.2$.

the value of y when $x = 30.2$.

[6 markah]

[6 marks]

Jawapan / Answer :

(a) Rujuk kepada graf pada halaman 22.

Refer to the graph on page 22.

(b) (i)

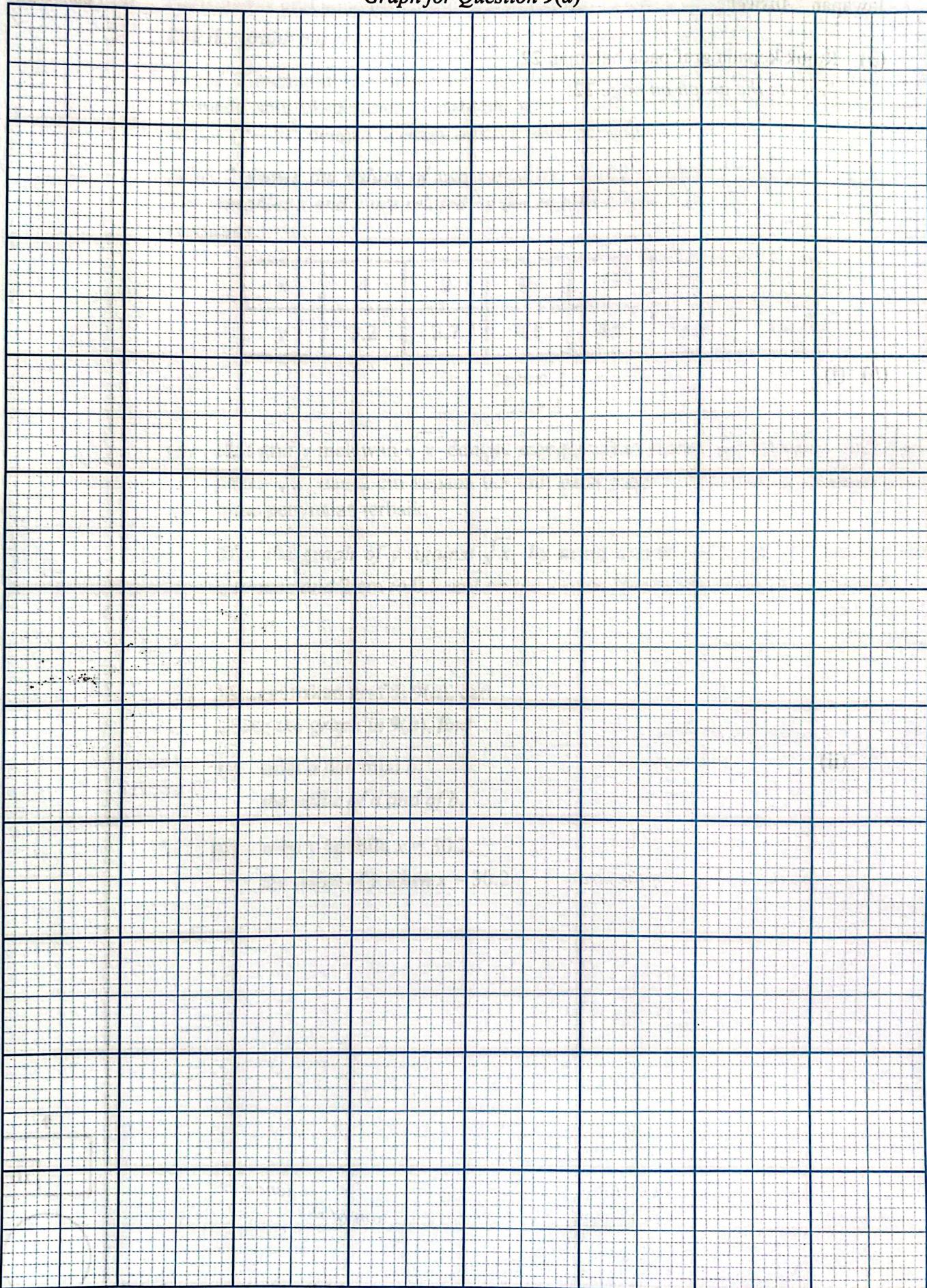
(ii)

[Lihat halaman sebelah

9

10

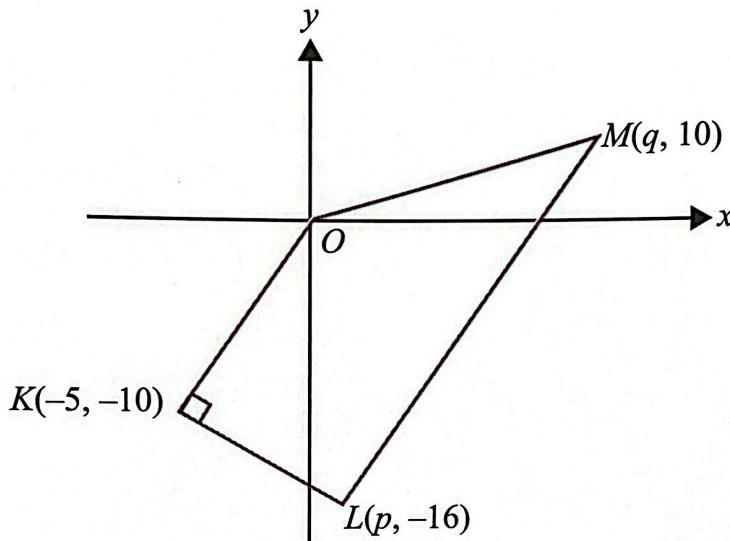
Graf untuk Soalan 9(a)
Graph for Question 9(a)



- 10 Penyelesaian secara lukisan berskala **tidak** diterima.
Solution by scale drawing is not accepted.

Rajah 5 menunjukkan sebuah trapezium $OKLM$. Diberi koordinat K , L dan M masing-masing ialah $(-5, -10)$, $(p, -16)$ dan $(q, 10)$. Garis lurus KL berserenjang dengan garis lurus OK .

Diagram 5 shows a trapezium $OKLM$. Given that the coordinates of K , L and M are $(-5, -10)$, $(p, -16)$ and $(q, 10)$ respectively. The straight line KL perpendicular to the straight line OK .



Rajah 5
Diagram 5

- (a) Cari nilai p .

Find the value of p .

[2 markah]
[2 marks]

- (b) Cari persamaan garis lurus LM dan nilai q .

Find the equation of the straight line LM and the value of q .

[3 markah]
[3 marks]

- (c) Hitungkan luas, dalam unit², bagi trapezium $OKLM$.

Calculate the area, in unit², of the trapezium $OKLM$.

[2 markah]
[2 marks]

- (d) Satu pagar dibina dengan syarat jarak antara pagar dengan titik K dan M adalah sentiasa dalam nisbah $2 : 3$, cari persamaan pagar itu.

A fence is built with condition that the distance between the fence and the point K and M is always in the ratio $2 : 3$, find the equation of the fence.

[3 markah]
[3 marks]

[Lihat halaman sebelah]

Jawapan / Answer :

(b)

(c)

Frekuensi sambung radio pada peralihan radio (iii) adalah $\frac{1}{2} \times 10^6$ Hz.
 Peringkat yang betul bagi frekuensi sambung radio adalah sebaiknya (iii).
 Sebab sambung radio yang berada di antara dua frekuensi sambung radio
 yang berturut-turut adalah $\frac{1}{2}$ kali frekuensi sambung radio yang lebih besar.

Peringkatnya (ii) bukan kerana ia adalah setengah frekuensi sambung radio.

Untuk setiap (i), (ii) dan (iii) sambung radio ini kesemuanya setengah.
 Jadi setiap sambung radio ini adalah $\frac{1}{2}$ kali frekuensi sambung radio yang berada di antara dua sambung radio yang berturut-turut.

Jawapan:

(d)

Amplitud sambung radio (i) adalah $\left(\frac{1}{2}\right)^2 = \frac{1}{4}$ kali amplitud sambung radio (A).

$0 > \left(\frac{1}{2}\right)^2 = \frac{1}{4} > \left(\frac{1}{2}\right)^3 = \frac{1}{8}$ kerana amplitud sambung radio (i) adalah setengah amplitud sambung radio (B).

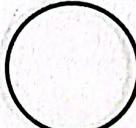
Amplitud sambung radio (ii) adalah $\left(\frac{1}{2}\right)^2 = \frac{1}{4}$ kali amplitud sambung radio (C).

$0 > \left(\frac{1}{2}\right)^2 = \frac{1}{4} > \left(\frac{1}{2}\right)^3 = \frac{1}{8}$ kerana amplitud sambung radio (ii) adalah setengah amplitud sambung radio (D).

Guru boleh memberi tambahan markah.

10

10



[Lihat halaman sebelah]

11 (a) Diberi $f(x) = \frac{3x}{2 - \sqrt{x+4}}$,

Given that $f(x) = \frac{3x}{2 - \sqrt{x+4}}$,

(i) cari $f(0)$,

find $f(0)$,

(ii) lengkapkan Jadual 3(i) dan Jadual 3(ii) yang diberi dalam ruang jawapan.
Berikan jawapan anda betul kepada empat tempat perpuluhan.

complete the Table 3(i) and Table 3(ii) given in the answer space.

Give your answers correct to four decimal places.

(iii) daripada jawapan dalam Jadual 3(i) dan Jadual 3(ii), nyatakan nilai bagi
had $\lim_{x \rightarrow 0} \frac{3x}{2 - \sqrt{x+4}}$.

*from the answer in the Table 3(i) and Table 3(ii), state the value of
 $\lim_{x \rightarrow 0} \frac{3x}{2 - \sqrt{x+4}}$.*

[4 markah]
[4 marks]

(b) Diberi $y = \frac{x^2 - 4}{x}$, ungkapkan $x^3 \left(\frac{d^2 y}{dx^2} \right) + x^2 \left(\frac{dy}{dx} \right)$ dalam sebutan x .

Kemudian, carikan julat bagi nilai x di mana $x^3 \left(\frac{d^2 y}{dx^2} \right) + x^2 \left(\frac{dy}{dx} \right) < 0$.

Given that $y = \frac{x^2 - 4}{x}$, express $x^3 \left(\frac{d^2 y}{dx^2} \right) + x^2 \left(\frac{dy}{dx} \right)$ in terms of x .

Hence, find the range of values of x such that $x^3 \left(\frac{d^2 y}{dx^2} \right) + x^2 \left(\frac{dy}{dx} \right) < 0$.

[6 markah]
[6 marks]

Jawapan / Answer :

(a) (i)



(ii)

x	-0.1	-0.01	-0.001	-0.0001	0
$f(x)$					-

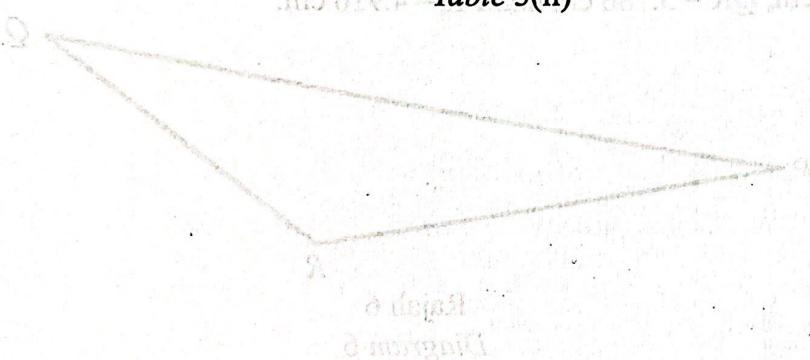
Jadual 3(i)
Table 3(i)

x	0.1	0.01	0.001	0.0001	0
$f(x)$					-

Jadual 3(ii)

Table 3(ii)

(iii)



(b)

[Lihat halaman sebelah

11

10

Bahagian C

Section C

[20 markah]

[20 marks]

Jawab mana-mana dua soalan daripada bahagian ini.

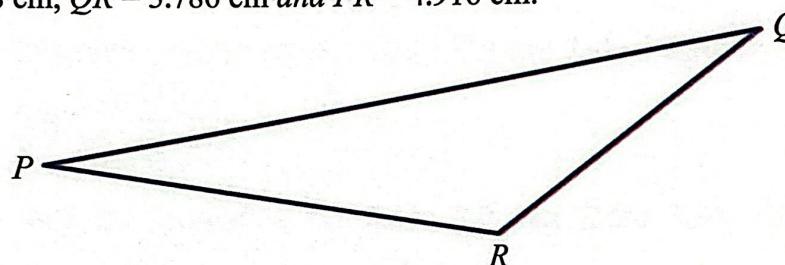
Answer any two questions from this section.

- 12 Penyelesaian secara lukisan berskala **tidak diterima**.

Solution by scale drawing is not accepted.

Rajah 6 menunjukkan sebuah segi tiga PQR dengan keadaan sudut R ialah sudut cakah. Diberi $PQ = 6.8$ cm, $QR = 3.786$ cm dan $PR = 4.916$ cm.

Diagram 6 shows a triangle PQR where angle R is an obtuse angle. Given that $PQ = 6.8$ cm, $QR = 3.786$ cm and $PR = 4.916$ cm.



Rajah 6

Diagram 6

- (a) Tanpa mencari sebarang sudut P , Q atau R , hitung luas, dalam cm^2 , bagi segi tiga PQR .

Without finding any of the angle P , Q or R , calculate the area, in cm^2 , of the triangle PQR .

[3 markah]

[3 marks]

- (b) Cari $\angle QPR$.

Find $\angle QPR$.

[2 markah]

[2 marks]

- (c) Garis lurus PR dipanjangkan ke titik R' dengan syarat $QR = QR'$ dan $\angle QPR = \angle QPR'$.

The straight line PR is extended to point R' with condition $QR = QR'$ and $\angle QPR = \angle QPR'$.

- (i) Lakarkan segi tiga PQR' .

Sketch the triangle PQR' .

- (ii) Hitungkan $\angle PR'Q$.

Calculate $\angle PR'Q$.

- (iii) Cari jarak terdekat, dalam cm, dari Q ke garis lurus PR' .

Find the shortest distance, in cm, from Q to the straight line PR' .

[5 markah]

[5 marks]

Jawapan / Answer :

(a)

(i) (a)

• Jumlah jarak dan masa dilakukan adalah sama. Jadi ia adalah perjalinan uniform.

• Jarak yang dilakukan berubah dengan masa. Jadi ia bukan merupakan perjalinan uniform.

i) Dalam suatu tempoh tertentu ia mengalami perjalinan beruniform. Tinggi dan lebar kawasan ini adalah sama.

ii) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

iii) Dengan sebaliknya ia mengalami perjalinan beruniform kerana tinggi dan lebar kawasan ini adalah sama.

(ii)

• Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

iv) Jumlah perjalinan dalam suatu tempoh tertentu sama dengan jumlah masa.

(iii)

v) Jumlah perjalinan dalam suatu tempoh tertentu sama dengan jumlah masa.

vi) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

vii) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

(iv)

viii) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

ix) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

(v)

x) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

(vi)

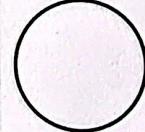
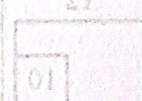
xi) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

(vii)

xii) Perjalinan ini bukan perjalinan beruniform kerana tinggi dan lebar kawasan ini tidak sama.

(viii)

[Lihat halaman sebelah]



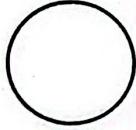
(c) (i)

(ii)

(iii)

12

10



- 13 Guna kertas graf yang disediakan pada halaman 33 untuk menjawab soalan ini.
Use the graph paper provided on page 33 to answer this question.

Diberi x dan y masing-masing mewakili bilangan murid Tingkatan 5 dan Tingkatan 6 yang akan menerima biasiswa. Syarat untuk menerima biasiswa adalah seperti yang berikut:

Given x and y represent the number of Form 5 and Form 6 students respectively, to be awarded scholarships. The conditions for the awards are as follows:

- I Bilangan penerima biasiswa Tingkatan 6 melebihi penerima biasiswa Tingkatan 5 selebih-lebihnya 200 orang.
The number of Form 6 recipients exceeds the number of Form 5 recipients by at most 200 people.
- II Bilangan penerima biasiswa Tingkatan 6 mestilah sekurang-kurangnya $\frac{2}{3}$ daripada bilangan penerima biasiswa Tingkatan 5.
The number of Form 6 recipients must be at least $\frac{2}{3}$ of the number of Form 5 recipients.
- III Jumlah penerima biasiswa adalah kurang daripada atau sama dengan 500 orang.
The total number of recipients is less than or equal to 500 people.

- (a) Tulis tiga ketaksamaan, selain daripada $x \geq 0$ dan $y \geq 0$, yang memenuhi semua syarat di atas.

Write three inequalities, other than $x \geq 0$ and $y \geq 0$, which satisfy all the above conditions.

[3 markah]
[3 marks]

- (b) Dengan menggunakan skala 2 cm kepada 100 orang murid pada kedua-dua paksi, bina dan lorek rantau R yang memenuhi semua syarat di atas.

Using a scale of 2 cm to 100 students on both axes, construct and shade the region R which satisfies all the above conditions.

[3 markah]
[3 marks]

- (c) Dengan menggunakan graf yang dibina di 13(b), cari amaun maksimum yang dibelanjakan sebulan jika amaun yang diberikan kepada penerima biasiswa Tingkatan 5 dan Tingkatan 6 masing-masing ialah RM30 dan RM40 setiap bulan.
By using the graph constructed in 13(b), find the maximum amount spent per month if the amounts given to Form 5 and Form 6 recipients are RM30 and RM40 per month respectively.
- (ii) amaun minimum dan maksimum yang dibelanjakan setiap bulan jika bilangan penerima biasiswa Tingkatan 6 ditetapkan seramai 250 orang.
the minimum and maximum amounts given out monthly if the number of Form 6 recipients is fixed at 250 people.

[4 markah]

[4 marks]

Jawapan / Answer :

(a)

(b) Rujuk kepada graf pada halaman 33.

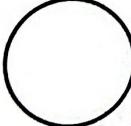
Refer to the graph on page 33.

(c) (i)

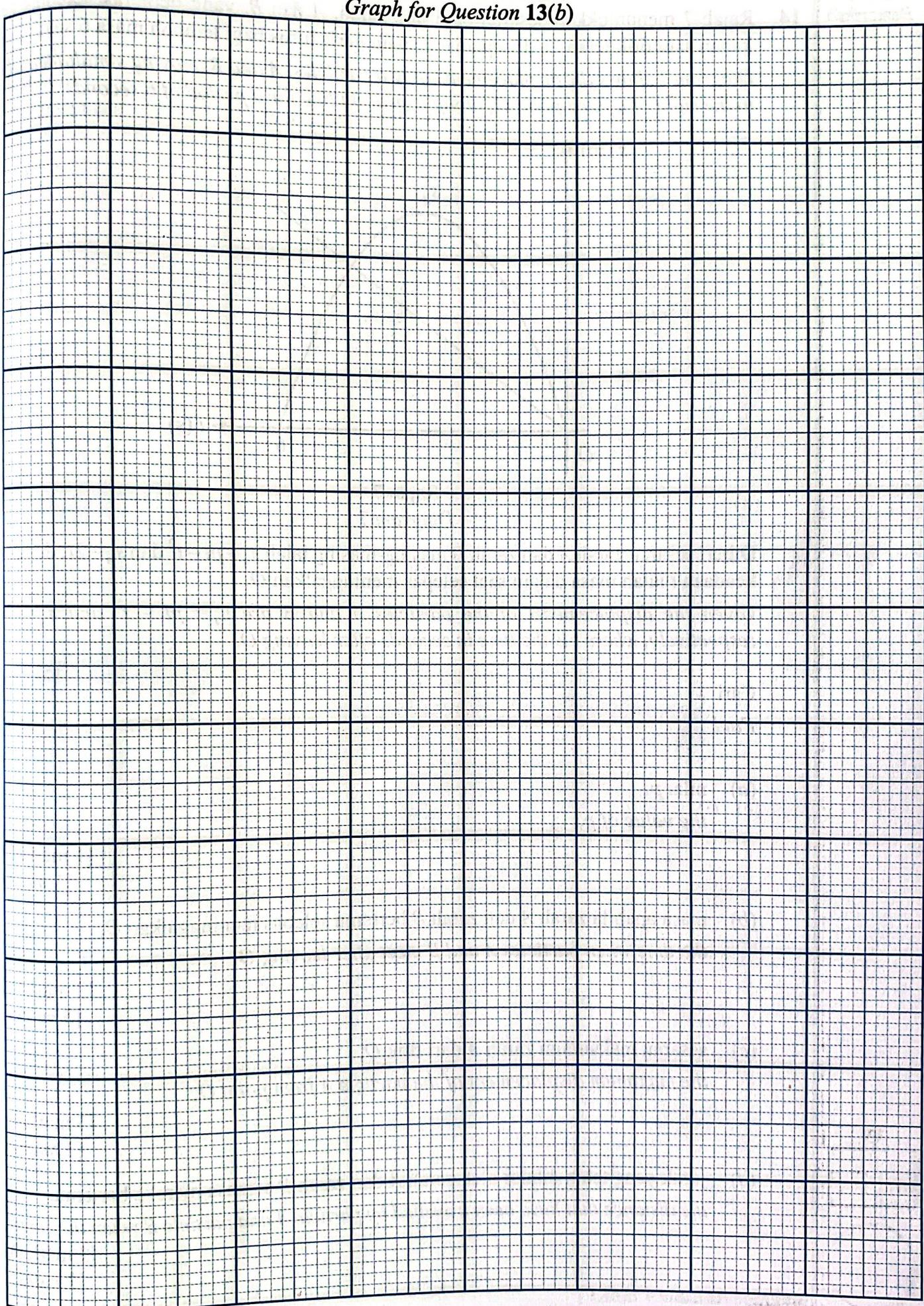
(ii)

13

10



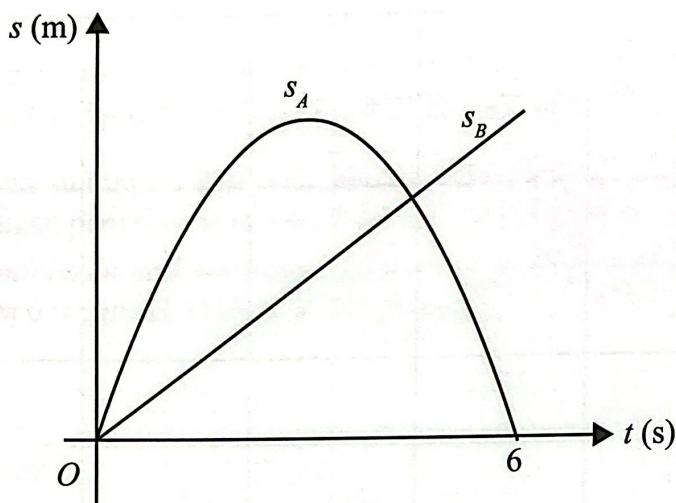
Graf untuk Soalan 13(b)
Graph for Question 13(b)



[Lihat halaman sebelah

- 14 Rajah 7 menunjukkan sesaran bagi dua zarah, A dan B , yang bergerak serentak ke kanan satu titik tetap O , di sepanjang suatu garis lurus bagi tempoh masa 6 saat.

Diagram 7 shows the displacements of two particles, A and B, moving simultaneously to the right of a fixed point O, along a straight line for a period of 6 seconds.



Rajah 7
Diagram 7

Diberi sesaran zarah A dan zarah B masing-masing ialah $s_A = pt - t^2$ dan $s_B = 2t$, dengan keadaan t ialah masa dalam saat selepas meninggalkan O .

Given the displacements of the particles A and B are $s_A = pt - t^2$ and $s_B = 2t$ respectively, where t is the time in seconds after leaving O .

Cari

Find

- (a) nilai p ,

the value of p ,

[1 markah]

[1 mark]

- (b) masa apabila zarah A dan zarah B bertemu selepas meninggalkan O ,

the time when particles A and B meet after leaving O,

[3 markah]

[3 marks]

- (c) sesaran maksimum zarah A dari titik O ,

the maximum displacement of the particle A from point O,

[3 markah]

[3 marks]

- (d) jarak yang telah dilalui oleh zarah A dan zarah B semasa mereka bertemu.

the distance that have been travelled by particle A and particle B when they meet.

[3 markah]

[3 marks]

- 15 Jadual 4 menunjukkan indeks harga dan peratus penggunaan bagi empat komponen, A , B , C dan D dalam penghasilan sebuah pencetak.

Table 4 shows the price indices and the percentage of usage of four components, A, B, C and D in the production of a printer.

Komponen <i>Component</i>	Indeks harga pada tahun 2021 berasaskan tahun 2019 <i>Price index for the year 2021 based on the year 2019</i>	Peratus penggunaan (%) <i>Percentage of usage (%)</i>
A	147	20
B	h	10
C	125	40
D	120	30

Jadual 4

Table 4

- (a) Hitung harga komponen D pada tahun 2019 jika harganya pada tahun 2021 ialah RM55.

Calculate the price of component D in the year 2019 if its price in the year 2021 is RM55.

[2 markah]

[2 marks]

- (b) Diberi indeks gubahan bagi kos penghasilan sebuah pencetak pada tahun 2021 berasaskan tahun 2019 ialah 130.4, cari nilai h .

Given that the composite index for the production cost of a printer in the year 2021 based on the year 2019 is 130.4, find the value of h .

[3 markah]

[3 marks]

- (c) Dari tahun 2021 ke tahun 2025, dijangka harga komponen A meningkat 20%, harga komponen B menyusut 5% dan harga komponen C dan D akan kekal.

From the year 2021 to the year 2025, the prediction to the prices of component A will be increased by 20%, the price of component B will be decreased by 5% and the prices of component C and D will remain unchanged.

- (i) Cari indeks gubahan bagi kos penghasilan sebuah pencetak pada tahun 2025 berasaskan tahun 2019.

Find the composite index for the production cost of a printer in the year 2025 based on the year 2019.

- (ii) Jika kos penghasilan sebuah pencetak pada tahun 2019 ialah RM170, hitungkan kos penghasilan sebuah pencetak yang sepadan pada tahun 2025.

If the production cost of a printer in the year 2019 is RM170, calculate the corresponding production cost of a printer in the year 2025.

[5 markah]

[5 marks]

Jawapan / Answer :

(a)

(ii)

(b)

Cara / Example:

Jika $\vec{a} = (0, 1)$,

Kemudian

$\vec{a} \times \vec{b} = 0$

$\vec{a} \times \vec{c} = 0$

$\vec{a} \times \vec{d} = 0$

TAMAT MATERIK SAINS
PERGURUAN RENDAH

[Lihat halaman sebelah]

- (c) (i) A printing firm produced 1000000 copies of a book in 1994. The production cost per copy was \$1.50. In 1995, the production cost per copy increased by 10%. In 1996, the production cost per copy increased by another 10%.
- The production cost per copy in 1996 was \$1.89.
- (ii) The firm produced 1000000 copies of a book in 1994. The production cost per copy in 1994 was \$1.50.
- In 1995, the production cost per copy increased by $k\%$. In 1996, the production cost per copy increased by another $k\%$.
- The production cost per copy in 1996 was \$1.89.

(iii) On 1 January 1994, the production cost per copy was \$1.50. It increased by $k\%$ each year from 1994 onwards.

If the production cost per copy in 1994 was \$1.50, find the value of k .

(3 marks)

Diagram

The firm ABC in 1994, bought two components A and B. Component A cost twice as much as component C and component C cost half as much as component B. The cost of component A in 1994 was \$120. In the year 1995, the cost of component A increased by 10% and the cost of component B increased by 15%. In the year 1996, the cost of component A increased by 10% and the cost of component B increased by 15%.

(iv) On 1 January 1994, the production cost per copy was \$1.50. It increased by $k\%$ each year from 1994 onwards.

If the production cost per copy in 1994 was \$1.50, find the value of k .

The firm ABC produced 1000000 copies of a book taken 1st to 4th floor 1994/95, 2nd to 5th floor 1995/96, 3rd to 6th floor 1996/97, 4th to 7th floor 1997/98, 5th to 8th floor 1998/99, 6th to 9th floor 1999/2000, 7th to 10th floor 2000/2001, 8th to 11th floor 2001/2002, 9th to 12th floor 2002/2003, 10th to 13th floor 2003/2004, 11th to 14th floor 2004/2005, 12th to 15th floor 2005/2006, 13th to 16th floor 2006/2007, 14th to 17th floor 2007/2008, 15th to 18th floor 2008/2009, 16th to 19th floor 2009/2010, 17th to 20th floor 2010/2011, 18th to 21st floor 2011/2012, 19th to 22nd floor 2012/2013, 20th to 23rd floor 2013/2014, 21st to 24th floor 2014/2015, 22nd to 25th floor 2015/2016, 23rd to 26th floor 2016/2017, 24th to 27th floor 2017/2018, 25th to 28th floor 2018/2019, 26th to 29th floor 2019/2020, 27th to 30th floor 2020/2021, 28th to 31st floor 2021/2022, 29th to 32nd floor 2022/2023, 30th to 33rd floor 2023/2024, 31st to 34th floor 2024/2025, 32nd to 35th floor 2025/2026, 33rd to 36th floor 2026/2027, 34th to 37th floor 2027/2028, 35th to 38th floor 2028/2029, 36th to 39th floor 2029/2030, 37th to 40th floor 2030/2031, 38th to 41st floor 2031/2032, 39th to 42nd floor 2032/2033, 40th to 43rd floor 2033/2034, 41st to 44th floor 2034/2035, 42nd to 45th floor 2035/2036, 43rd to 46th floor 2036/2037, 44th to 47th floor 2037/2038, 45th to 48th floor 2038/2039, 46th to 49th floor 2039/2040, 47th to 50th floor 2040/2041, 48th to 51st floor 2041/2042, 49th to 52nd floor 2042/2043, 50th to 53rd floor 2043/2044, 51st to 54th floor 2044/2045, 52nd to 55th floor 2045/2046, 53rd to 56th floor 2046/2047, 54th to 57th floor 2047/2048, 55th to 58th floor 2048/2049, 56th to 59th floor 2049/2050, 57th to 60th floor 2050/2051, 58th to 61st floor 2051/2052, 59th to 62nd floor 2052/2053, 60th to 63rd floor 2053/2054, 61st to 64th floor 2054/2055, 62nd to 65th floor 2055/2056, 63rd to 66th floor 2056/2057, 64th to 67th floor 2057/2058, 65th to 68th floor 2058/2059, 66th to 69th floor 2059/2060, 67th to 70th floor 2060/2061, 68th to 71st floor 2061/2062, 69th to 72nd floor 2062/2063, 70th to 73rd floor 2063/2064, 71st to 74th floor 2064/2065, 72nd to 75th floor 2065/2066, 73rd to 76th floor 2066/2067, 74th to 77th floor 2067/2068, 75th to 78th floor 2068/2069, 76th to 79th floor 2069/2070, 77th to 80th floor 2070/2071, 78th to 81st floor 2071/2072, 79th to 82nd floor 2072/2073, 80th to 83rd floor 2073/2074, 81st to 84th floor 2074/2075, 82nd to 85th floor 2075/2076, 83rd to 86th floor 2076/2077, 84th to 87th floor 2077/2078, 85th to 88th floor 2078/2079, 86th to 89th floor 2079/2080, 87th to 90th floor 2080/2081, 88th to 91st floor 2081/2082, 89th to 92nd floor 2082/2083, 90th to 93rd floor 2083/2084, 91st to 94th floor 2084/2085, 92nd to 95th floor 2085/2086, 93rd to 96th floor 2086/2087, 94th to 97th floor 2087/2088, 95th to 98th floor 2088/2089, 96th to 99th floor 2089/2090, 97th to 100th floor 2090/2091, 98th to 101st floor 2091/2092, 99th to 102nd floor 2092/2093, 100th to 103rd floor 2093/2094, 101st to 104th floor 2094/2095, 102nd to 105th floor 2095/2096, 103rd to 106th floor 2096/2097, 104th to 107th floor 2097/2098, 105th to 108th floor 2098/2099, 106th to 109th floor 2099/20100, 107th to 110th floor 2010/2011, 108th to 111th floor 2011/2012, 109th to 112th floor 2012/2013, 110th to 113th floor 2013/2014, 111th to 114th floor 2014/2015, 112th to 115th floor 2015/2016, 113th to 116th floor 2016/2017, 114th to 117th floor 2017/2018, 115th to 118th floor 2018/2019, 116th to 119th floor 2019/2020, 117th to 120th floor 2020/2021, 118th to 121st floor 2021/2022, 119th to 122nd floor 2022/2023, 120th to 123rd floor 2023/2024, 121st to 124th floor 2024/2025, 122nd to 125th floor 2025/2026, 123rd to 126th floor 2026/2027, 124th to 127th floor 2027/2028, 125th to 128th floor 2028/2029, 126th to 129th floor 2029/2030, 127th to 130th floor 2030/2031, 128th to 131st floor 2031/2032, 129th to 132nd floor 2032/2033, 130th to 133rd floor 2033/2034, 131st to 134th floor 2034/2035, 132nd to 135th floor 2035/2036, 133rd to 136th floor 2036/2037, 134th to 137th floor 2037/2038, 135th to 138th floor 2038/2039, 136th to 139th floor 2039/2040, 137th to 140th floor 2040/2041, 138th to 141st floor 2041/2042, 139th to 142nd floor 2042/2043, 140th to 143rd floor 2043/2044, 141st to 144th floor 2044/2045, 142nd to 145th floor 2045/2046, 143rd to 146th floor 2046/2047, 144th to 147th floor 2047/2048, 145th to 148th floor 2048/2049, 146th to 149th floor 2049/2050, 147th to 150th floor 2050/2051, 148th to 151st floor 2051/2052, 149th to 152nd floor 2052/2053, 150th to 153rd floor 2053/2054, 151st to 154th floor 2054/2055, 152nd to 155th floor 2055/2056, 153rd to 156th floor 2056/2057, 154th to 157th floor 2057/2058, 155th to 158th floor 2058/2059, 156th to 159th floor 2059/2060, 157th to 160th floor 2060/2061, 158th to 161st floor 2061/2062, 159th to 162nd floor 2062/2063, 160th to 163rd floor 2063/2064, 161st to 164th floor 2064/2065, 162nd to 165th floor 2065/2066, 163rd to 166th floor 2066/2067, 164th to 167th floor 2067/2068, 165th to 168th floor 2068/2069, 166th to 169th floor 2069/2070, 167th to 170th floor 2070/2071, 168th to 171st floor 2071/2072, 169th to 172nd floor 2072/2073, 170th to 173rd floor 2073/2074, 171st to 174th floor 2074/2075, 172nd to 175th floor 2075/2076, 173rd to 176th floor 2076/2077, 174th to 177th floor 2077/2078, 175th to 178th floor 2078/2079, 176th to 179th floor 2079/2080, 177th to 180th floor 2080/2081, 178th to 181st floor 2081/2082, 179th to 182nd floor 2082/2083, 180th to 183rd floor 2083/2084, 181st to 184th floor 2084/2085, 182nd to 185th floor 2085/2086, 183rd to 186th floor 2086/2087, 184th to 187th floor 2087/2088, 185th to 188th floor 2088/2089, 186th to 189th floor 2089/2090, 187th to 190th floor 2090/2091, 188th to 191st floor 2091/2092, 189th to 192nd floor 2092/2093, 190th to 193rd floor 2093/2094, 191st to 194th floor 2094/2095, 192nd to 195th floor 2095/2096, 193rd to 196th floor 2096/2097, 194th to 197th floor 2097/2098, 195th to 198th floor 2098/2099, 196th to 199th floor 2099/20100, 197th to 200th floor 2010/2011, 198th to 201st floor 2011/2012, 199th to 202nd floor 2012/2013, 200th to 203rd floor 2013/2014, 201st to 204th floor 2014/2015, 202nd to 205th floor 2015/2016, 203rd to 206th floor 2016/2017, 204th to 207th floor 2017/2018, 205th to 208th floor 2018/2019, 206th to 209th floor 2019/2020, 207th to 210th floor 2020/2021, 208th to 211st floor 2021/2022, 209th to 212nd floor 2022/2023, 210th to 213rd floor 2023/2024, 211st to 214th floor 2024/2025, 212nd to 215th floor 2025/2026, 213rd to 216th floor 2026/2027, 214th to 217th floor 2027/2028, 215th to 218th floor 2028/2029, 216th to 219th floor 2029/2030, 217th to 220th floor 2030/2031, 218th to 221st floor 2031/2032, 219th to 222nd floor 2032/2033, 220th to 223rd floor 2033/2034, 221st to 224th floor 2034/2035, 222nd to 225th floor 2035/2036, 223rd to 226th floor 2036/2037, 224th to 227th floor 2037/2038, 225th to 228th floor 2038/2039, 226th to 229th floor 2039/2040, 227th to 230th floor 2040/2041, 228th to 231st floor 2041/2042, 229th to 232nd floor 2042/2043, 230th to 233rd floor 2043/2044, 231st to 234th floor 2044/2045, 232nd to 235th floor 2045/2046, 233rd to 236th floor 2046/2047, 234th to 237th floor 2047/2048, 235th to 238th floor 2048/2049, 236th to 239th floor 2049/2050, 237th to 240th floor 2050/2051, 238th to 241st floor 2051/2052, 239th to 242nd floor 2052/2053, 240th to 243rd floor 2053/2054, 241st to 244th floor 2054/2055, 242nd to 245th floor 2055/2056, 243rd to 246th floor 2056/2057, 244th to 247th floor 2057/2058, 245th to 248th floor 2058/2059, 246th to 249th floor 2059/2060, 247th to 250th floor 2060/2061, 248th to 251st floor 2061/2062, 249th to 252nd floor 2062/2063, 250th to 253rd floor 2063/2064, 251st to 254th floor 2064/2065, 252nd to 255th floor 2065/2066, 253rd to 256th floor 2066/2067, 254th to 257th floor 2067/2068, 255th to 258th floor 2068/2069, 256th to 259th floor 2069/2070, 257th to 260th floor 2070/2071, 258th to 261st floor 2071/2072, 259th to 262nd floor 2072/2073, 260th to 263rd floor 2073/2074, 261st to 264th floor 2074/2075, 262nd to 265th floor 2075/2076, 263rd to 266th floor 2076/2077, 264th to 267th floor 2077/2078, 265th to 268th floor 2078/2079, 266th to 269th floor 2079/2080, 267th to 270th floor 2080/2081, 268th to 271st floor 2081/2082, 269th to 272nd floor 2082/2083, 270th to 273rd floor 2083/2084, 271st to 274th floor 2084/2085, 272nd to 275th floor 2085/2086, 273rd to 276th floor 2086/2087, 274th to 277th floor 2087/2088, 275th to 278th floor 2088/2089, 276th to 279th floor 2089/2090, 277th to 280th floor 2090/2091, 278th to 281st floor 2091/2092, 279th to 282nd floor 2092/2093, 280th to 283rd floor 2093/2094, 281st to 284th floor 2094/2095, 282nd to 285th floor 2095/2096, 283rd to 286th floor 2096/2097, 284th to 287th floor 2097/2098, 285th to 288th floor 2098/2099, 286th to 289th floor 2099/20100, 287th to 290th floor 2010/2011, 288th to 291st floor 2011/2012, 289th to 292nd floor 2012/2013, 290th to 293rd floor 2013/2014, 291st to 294th floor 2014/2015, 292nd to 295th floor 2015/2016, 293rd to 296th floor 2016/2017, 294th to 297th floor 2017/2018, 295th to 298th floor 2018/2019, 296th to 299th floor 2019/2020, 297th to 300th floor 2020/2021, 298th to 301st floor 2021/2022, 299th to 302nd floor 2022/2023, 300th to 303rd floor 2023/2024, 301st to 304th floor 2024/2025, 302nd to 305th floor 2025/2026, 303rd to 306th floor 2026/2027, 304th to 307th floor 2027/2028, 305th to 308th floor 2028/2029, 306th to 309th floor 2029/2030, 307th to 310th floor 2030/2031, 308th to 311st floor 2031/2032, 309th to 312nd floor 2032/2033, 310th to 313rd floor 2033/2034, 311st to 314th floor 2034/2035, 312nd to 315th floor 2035/2036, 313rd to 316th floor 2036/2037, 314th to 317th floor 2037/2038, 315th to 318th floor 2038/2039, 316th to 319th floor 2039/2040, 317th to 320th floor 2040/2041, 318th to 321st floor 2041/2042, 319th to 322nd floor 2042/2043, 320th to 323rd floor 2043/2044, 321st to 324th floor 2044/2045, 322nd to 325th floor 2045/2046, 323rd to 326th floor 2046/2047, 324th to 327th floor 2047/2048, 325th to 328th floor 2048/2049, 326th to 329th floor 2049/2050, 327th to 330th floor 2050/2051, 328th to 331st floor 2051/2052, 329th to 332nd floor 2052/2053, 330th to 333rd floor 2053/2054, 331st to 334th floor 2054/2055, 332nd to 335th floor 2055/2056, 333rd to 336th floor 2056/2057, 334th to 337th floor 2057/2058, 335th to 338th floor 2058/2059, 336th to 339th floor 2059/2060, 337th to 340th floor 2060/2061, 338th to 341st floor 2061/2062, 339th to 342nd floor 2062/2063, 340th to 343rd floor 2063/2064, 341st to 344th floor 2064/2065, 342nd to 345th floor 2065/2066, 343rd to 346th floor 2066/2067, 344th to 347th floor 2067/2068, 345th to 348th floor 2068/2069, 346th to 349th floor 2069/2070, 347th to 350th floor 2070/2071, 348th to 351st floor 2071/2072, 349th to 352nd floor 2072/2073, 350th to 353rd floor 2073/2074, 351st to 354th floor 2074/2075, 352nd to 355th floor 2075/2076, 353rd to 356th floor 2076/2077, 354th to 357th floor 2077/2078, 355th to 358th floor 2078/2079, 356th to 359th floor 2079/2080, 357th to 360th floor 2080/2081, 358th to 361st floor 2081/2082, 359th to 362nd floor 2082/2083, 360th to 363rd floor 2083/2084, 361st to 364th floor 2084/2085, 362nd to 365th floor 2085/2086, 363rd to 366th floor 2086/2087, 364th to 367th floor 2087/2088, 365th to 368th floor 2088/2089, 366th to 369th floor 2089/2090, 367th to 370th floor 2090/2091, 368th to 371st floor 2091/2092, 369th to 372nd floor 2092/2093, 370th to 373rd floor 2093/2094, 371st to 374th floor 2094/2095, 372nd to 375th floor 2095/2096, 373rd to 376th floor 2096/2097, 374th to 377th floor 2097/2098, 375th to 378th floor 2098/2099, 376th to 379th floor 2099/20100, 377th to 380th floor 2010/2011, 378th to 381st floor 2011/2012, 379th to 382nd floor 2012/2013, 380th to 383rd floor 2013/2014, 381st to 384th floor 2014/2015, 382nd to 385th floor 2015/2016, 383rd to 386th floor 2016/2017, 384th to 387th floor 2017/2018, 385th to 388th floor 2018/2019, 386th to 389th floor 2019/2020, 387th to 390th floor 2020/2021, 388th to 391st floor 2021/2022, 389th to 392nd floor 2022/2023, 390th to 393rd floor 2023/2024, 391st to 394th floor 2024/2025, 392nd to 395th floor 2025/2026, 393rd to 396th floor 2026/2027, 394th to 397th floor 2027/2028, 395th to 398th floor 2028/2029, 396th to 399th floor 2029/2030, 397th to 400th floor 2030/2031, 398th to 401st floor 2031/2032, 399th to 402nd floor 2032/2033, 400th to 403rd floor 2033/2034, 401st to 404th floor 2034/2035, 402nd to 405th floor 2035/2036, 403rd to 406th floor 2036/2037, 404th to 407th floor 2037/2038, 405th to 408th floor 2038/2039, 406th to 409th floor 2039/2040, 407th to 410th floor 2040/2041, 408th to 411st floor 2041/2042, 409th to 412nd floor 2042/2043, 410th to 413rd floor 2043/2044, 411st to 414th floor 2044/2045, 412nd to 415th floor 2045/2046, 413rd to 416th floor 2046/2047, 414th to 417th floor 2047/2048, 415th to 418th floor 2048/2049, 416th to 419th floor 2049/2050, 417th to 420th floor 2050/2051, 418th to 421st floor 2051/2052, 419th to 422nd floor 2052/2053, 420th to 423rd floor 2053/2054, 421st to 424th floor 2054/2055, 422nd to 425th floor 2055/2056, 423rd to 426th floor 2056/2057, 424th to 427th floor 2057/2058, 425th to 428th floor 2058/2059, 426th to 429th floor 2059/2060, 427th to 430th floor 2060/2061, 428th to 431st floor 2061/2062, 429th to 432nd floor 2062/2063, 430th to 433rd floor 2063/2064, 431st to 434th floor 2064/2065, 432nd to 435th floor 2065/2066, 433rd to 436th floor 2066/2067, 434th to 437th floor 2067/2068, 435th to 438th floor 2068/2069, 436th to 439th floor 2069/2070, 437th to 440th floor 2070/2071, 438th to 441st floor 2071/2072, 439th to 442nd floor 2072/2073, 440th to 443rd floor 2073/2074, 441st to 444th floor 2074/2075, 442nd to 445th floor 2075/2076, 443rd to 446th floor 2076/2077, 444th to 447th floor 2077/2078, 445th to 448th floor 2078/2079, 446th to 449th floor 2079/2080, 447th to 450th floor 2080/2081, 448th to 451st floor 2081/2082, 449th to 452nd floor 2082/2083, 450th to 453rd floor 2083/2084, 451st to 454th floor 2084/2085, 452nd to 455th floor 2085/2086, 453rd to 456th floor 2086/2087, 454th to 457th floor 2087/2088, 455th to 458th floor 2088/2

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

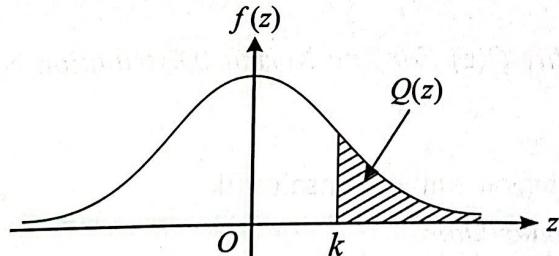
z	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	Minus / Tolak						
																				16	20	24	28	32	36	
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36							
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	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	4	5	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	3							
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		0.00990	0.00964	0.00939	0.00914			3	5	8	10	13	15	18	20	23							
2.4	0.00820	0.00798	0.00776	0.00755	0.00734		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							

Bagi z negatif guna hubungan:

For negative z use relation:

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

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



Contoh / Example:

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

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

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

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

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

MAKLUMAT UNTUK CALON
INFORMATION FOR CANDIDATES

- Kertas peperiksaan ini mengandungi tiga bahagian: **Bahagian A, Bahagian B dan Bahagian C.**
This question paper consists of three sections: Section A, Section B and Section C.
- Jawab **semua** soalan dalam **Bahagian A**, mana-mana **tiga** soalan daripada **Bahagian B** dan mana-mana **dua** soalan daripada **Bahagian C**.
Answer all questions in Section A, any three questions from Section B and any two questions from Section C.
- Tulis jawapan anda dalam ruang yang disediakan dalam kertas peperiksaan.
Write your answers in the spaces provided in the question paper.
- Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.
Show your working. It may help you to get marks.
- Sekiranya anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baharu.
If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.
- Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
The diagrams in the questions provided are not drawn to scale unless stated.
- Markah yang diperuntukkan bagi setiap soalan dan ceraian soalan ditunjukkan dalam kurungan.
The marks allocated for each question and sub-part of a question are shown in brackets.
- Satu senarai rumus disediakan di halaman 2.
A list of formulae is provided on page 2.
- Jadual Kebarangkalian Hujung Atas $Q(z)$ Bagi Taburan Normal $N(0, 1)$ disediakan di halaman 39.
The Upper Tail Probability $Q(z)$ For The Normal Distribution $N(0, 1)$ Table is provided on page 39.
- Anda dibenarkan menggunakan kalkulator saintifik.
You may use a scientific calculator.
- Serahkan kertas peperiksaan ini kepada pengawas peperiksaan di akhir peperiksaan.
Hand in this question paper to the invigilator at the end of the examination.