

Answer all questions.
Jawab semua soalan.

- 1 Diagram 1 shows a semicircle with centre O and a radius of 6 cm. ABO is a right-angled triangle with $\angle ABO = \frac{\pi}{6}$ radian.

For
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use

Rajah 1 menunjukkan satu semi bulatan berpusat di O dengan jejari 6 cm. ABO ialah satu segitiga bersudut tegak dengan $\angle ABO = \frac{\pi}{6}$ radian .

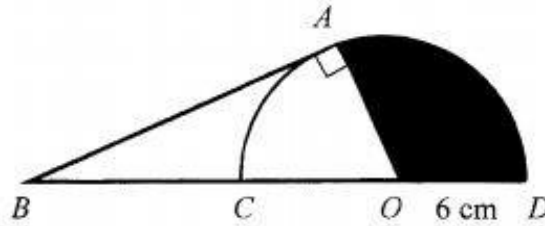


Diagram 1/ Rajah 1

- a) Find the length of arc AC

Cari panjang lengkok AC

- b) Calculate the area of the shaded region

Hitungkan luas kawasan berlorek

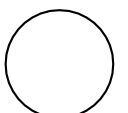
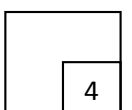
[4 marks/4markah]

Answer/ Jawapan:

(a)

(b)

1



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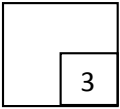
- 2 A spherical balloon expands at a rate of $90\pi \text{ cm}^2 \text{ s}^{-1}$ while its radius increases at a rate of cm s^{-1} when the radius is k cm. Using the formula $V = \frac{4}{3}\pi r^3$, find the value of k .

Sebuah belon mengembang dengan kadar $90\pi \text{ cm}^2 \text{ s}^{-1}$ manakala jejaringnya pula bertambah dengan kadar 2.5 cm s^{-1} ketika jejaringnya ialah k cm. Guna rumus $V = \frac{4}{3}\pi r^3$, cari nilai k .

[3 marks / 3 markah]

Answer / Jawapan:

2



- 3 $P(3, k)$ is a point dividing the line joining $H(-3, -1)$ and $J(5, 15)$ internally in the ratio $\alpha : \beta$.

Find

$P(3, k)$ ialah titik yang membahagi dalam garis lurus yang menyambungkan titik $H(-3, -1)$ dan $J(5, 15)$ dalam nisbah $\alpha : \beta$. Cari

- (a) the ratio $\alpha : \beta$

nisbah $\alpha : \beta$

- (b) the value of k .

nilai bagi k .

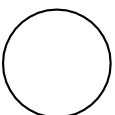
[3 marks / 3 markah]

Answer / Jawapan:

- (a)

- (b)

3



4 Diagram 4 shows a parallelogram $PQRS$ and STQ is a straight line.

Rajah 4 menunjukkan segiempat selari $PQRS$ dan STQ ialah garis lurus.

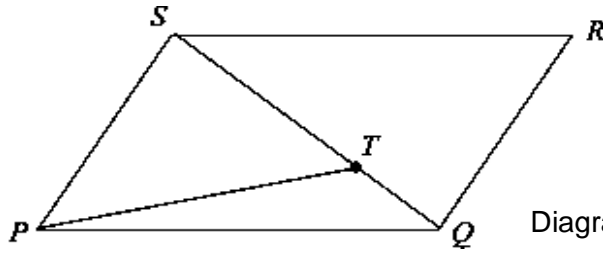


Diagram 4/ Rajah 4

Given $\overrightarrow{PQ} = 12\mathbf{a}$, $\overrightarrow{PS} = 6\mathbf{b}$ and $\overrightarrow{ST} = 2TQ$, express in terms of \mathbf{a} and \mathbf{b} ,

Diberi $\overrightarrow{PQ} = 12\mathbf{a}$, $\overrightarrow{PS} = 6\mathbf{b}$ dan $\overrightarrow{ST} = 2TQ$, ungkapkan dalam sebutan \mathbf{a} dan \mathbf{b} ,

(a) \overrightarrow{SQ}

(b) \overrightarrow{PT}

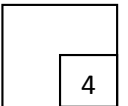
[4 marks/ 4 markah]

Answer / Jawapan :

(a)

(b)

4

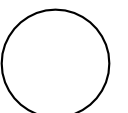
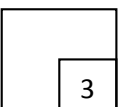


5 Find the value a if
Carikan nilai a jika

$$\frac{a^{\frac{8}{15}}}{a^{\frac{1}{5}}} = 3$$

[3 marks/3 markah]

5



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examiner's
use

6

Diagram 6 shows a straight line graph $(y - 2x)$ against x^2 . The variables x and y are related by the equation $y = px^2 + 2x + 5q$, where p and q are constants.
Rajah 6 menunjukkan graf $(y - 2x)$ melawan x^2 . Pembolehubah x dan y dihubungkan oleh persamaan $y = px^2 + 2x + 5q$, dengan keadaan p dan q ialah pemalar.

Find the value of p and of q .

Cari nilai p dan nilai q .

[4 marks/ 4 markah]

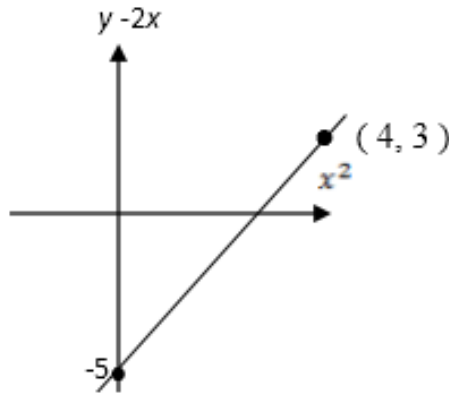
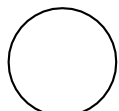


Diagram 6 / Rajah 6

Answer / Jawapan :

6



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Lihat halaman sebelah
SULIT

7 Function f is defined as $f : x \rightarrow \frac{p+x}{3+2x}$ for all the values of x except $x = h$ and p is a constant.

Fungsi f ditakrifkan oleh $f : x \rightarrow \frac{p+x}{3+2x}$ bagi semua nilai x kecuali $x = h$ dan p ialah pemalar.

(a) State the value of h ,

Nyatakan nilai bagi h ,

(b) Given that 2 is mapped onto itself for the function f , find the value of p .

Diberi nilai 2 dipetakan kepada dirinya sendiri di bawah fungsi f , cari nilai bagi p .

[3 marks / 3 markah]

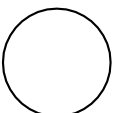
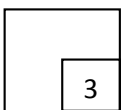
Answer / Jawapan :

(a)

(b)

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7



For
examiner's
use

8 Diagram 3 shows the arrangement of eight chairs in a room.

Rajah 3 menunjukkan susunan lapan buah kerusi di dalam sebuah bilik.

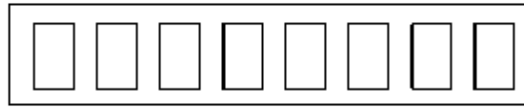


Diagram 8/ Rajah 8

(a) Ali, Othman and Ridzuan came into the room and each occupied a chair, find the number of ways they can be seated.

Ali, Othman dan Ridzuan masuk ke dalam bilik dan setiap orang memenuhi sebuah kerusi, cari bilangan cara kedudukan mereka.

(b) If Abu and his wife also came into the room and they prefer to sit side by side, find the number of ways the five of them can be seated.

Jika Abu dan isterinya juga masuk ke dalam bilik itu dan mereka ingin duduk bersebelahan, cari bilangan cara kedudukan lima orang itu.

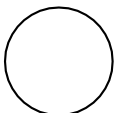
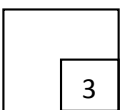
[3 marks/ 3 markah]

Answer / Jawapan :

(a)

(b)

8



9 Mr. Ravi is a *roti canai* hawker. The daily profit that he can obtain, in RM, is given by

$$f: x \rightarrow \frac{6x-42}{5}, \text{ where } x \text{ is the number of } \textit{roti canai} \text{ sold in a day.}$$

En. Ravi ialah seorang penjaja roti canai. Keuntungan harian yang dapat diperolehinya, dalam RM, diberi oleh $f: x \rightarrow \frac{6x-42}{5}$, dengan keadaan x ialah bilangan roti canai yang dijual dalam sehari.

Determine

Tentukan

- (a) the average daily profit obtained by Mr. Ravi if he has sold 231 *roti canai* in a week,
purata keuntungan harian yang diperolehi En. Ravi jika dia telah menjual 231 keping roti canai dalam seminggu,
- (b) the minimum number of *roti canai* that must be sold in a day so that Mr. Ravi would not experience any loss.
bilangan minimum roti canai yang perlu dijual dalam sehari supaya En. Ravi tidak mengalami sebarang kerugian.

[4 marks / 4 markah]

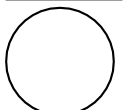
Answer / *Jawapan* :

(a)

(b)

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9



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examiner's
use

- 10 Ah Chong and Abu competed in a game which has two outcomes, win or lose.
The game will end when any of the players has won two sets. The probability that Ah Chong will win any one set is 0.6.

Ah Chong dan Abu bertanding dalam satu permainan yang mempunyai dua kesudahan, menang atau kalah. Permainan akan berakhir apabila salah seorang menang dua set. Kebarangkalian Ah Chong menang salah satu set ialah 0.6.

Calculate the probability that

Kira kebarangkalian bahawa

- a) Abu will win in straight sets
Abu akan menang dalam set yang berterusan
- b) Ah Chong will win the competition after playing 3 sets
Ah Chong akan menang permainan itu selepas bermain 3 set

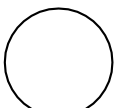
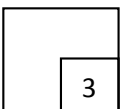
[3 marks/ 3 markah]

Answer / Jawapan :

(a)

(b)

10



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11

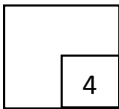
Solve the equation

Selesaikan persamaan

$$6 \sec^2 A - 13 \tan A = 0, \quad 0^\circ \leq A \leq 360^\circ.$$

[4 marks/ 4 markah]

11



- 12 The mean of a set of data 20, 19, 16, 3k, k and 1, arranged in descending order is m . If each data in the set is reduced by 3, the median of the of the new set of data is $\frac{10+m}{2}$.

Find the values of k and of m .

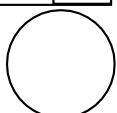
Min bagi suatu set data 20, 19, 16, 3k, k dan 1, disusun mengikut tertib menurun ialah m .

Jika setiap data dalam set tersebut dikurangkan 3, median bagi set data yang baru ialah $\frac{10+m}{2}$. Cari nilai bagi k dan bagi m .

[3 marks / 3 markah]

Answer / Jawapan :

12



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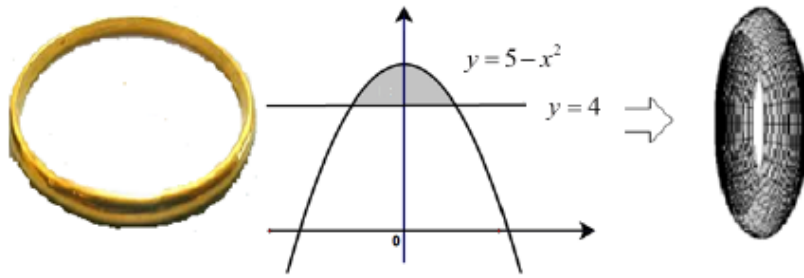


Diagram 13/ Rajah 13

Diagram 19 shows a bracelet which can be seen as a solid of revolution formed by revolving the shaded region R by 360° about the x-axis. If the 1 cm^3 volume of the bracelet is equal to 1.35g, what is the total weight of the bracelet?

Rajah 19 menunjukkan sebentuk gelang yang boleh dilihat sebagai pepejal kisanan yang dibentuk dengan mengkisarkan rantau berlorek R sebanyak 360° pada paksi-x. Jika 1 cm^3 isipadu gelang tersebut bersamaan 1.35g, berapakah jumlah berat gelang itu.

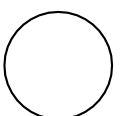
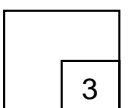
[Use / guna $\pi = 3.142$]

[3 marks / 3 markah]

Answer / Jawapan:

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13



For
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use

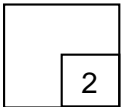
- 14 Given the quadratic function $f(x) = m - 2(n - x)^2$ has a maximum point of (6, -4) . Find the value of m and of n .

Diberi fungsi kuadratik $f(x) = m - 2(n - x)^2$ mempunyai titik maksimum (6, -4) . Cari nilai bagi m dan nilai bagi n .

[2 marks /2 markah]

Answer / Jawapan:

12



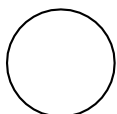
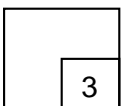
- 15 Given points $P(1,7)$, $Q(4,3)$ $R(1, -1)$ and S are vertices of a rhombus. Calculate the area of the rhombus.

Diberi titik-titik $P(1,7)$, $Q(4,3)$ $R(1, -1)$ dan S adalah bucu-bucu sebuah rombus. Hitung luas rombus itu.

[3 marks /3 markah]

Answer / Jawapan :

15



- 16 Diagram 16 shows the shot target board in square shape with sides of 15 cm in the shooting range. There is a black circle with a diameter of 5 cm in the middle of the target board.
Rajah 24 menunjukkan papan sasaran tembakan berbentuk segi empat sama bersisi 15 cm yang terdapat di lapang sasar. Terdapat sebuah bulatan hitam berdiameter 5 cm di tengahnya.

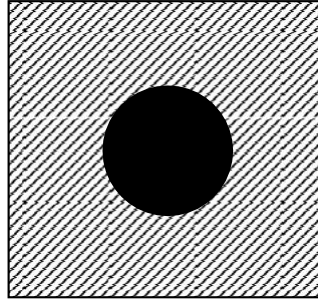


Diagram 16 / *Rajah 16*

Chong is a sharpshooter and his shots are always on target board. Find the probability, Chong shot on the shaded area.

Chong merupakan seorang penembak tepat yang tembakannya sentiasa mengenai papan sasaran tembakan. Cari kebarangkalian, tembakan Chong mengenai kawasan berlorek.

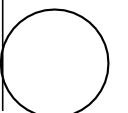
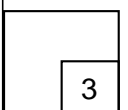
[Use / *Gunakan* $\pi = 3.142$]

[3 marks / 3 markah]

Answer / *Jawapan:*

*For
examiner's
use*

16



For
examiner's
use

17 Given $\tan \theta = p$, where p is a constant and $180^\circ \leq \theta \leq 360^\circ$. Find in terms of p
Diberi $\tan \theta = p$, dengan keadaan p ialah pemalar dan $180^\circ \leq \theta \leq 360^\circ$. Cari dalam sebutan

p ,
(a) $\tan 2\theta$,

(b) $\operatorname{cosec} 2\theta$.

kosek 2θ .

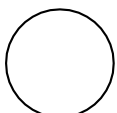
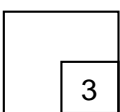
[3 marks / 3 markah]

Answer / Jawapan:

(a)

(b)

17



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Lihat halaman sebelah
SULIT

18 (a) State the value of ${}^x C_x$.

Nyatakan nilai ${}^x C_x$.

(b) A question paper consist of part A and part B. Each part contains 5 questions. Calculate the number of different ways if a student needs to choose 3 questions from part A and 2 questions from part B.

Satu kertas soalan terdiri daripada bahagian A dan bahagian B. Setiap bahagian mengandungi 5 soalan. Hitungkan bilangan cara yang berlainan jika seorang pelajar perlu memilih 3 soalan daripada bahagian A dan 2 soalan daripada bahagian B.

[3 marks / 3 markah]

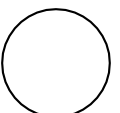
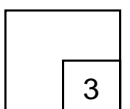
Answer / Jawapan:

(a)

(b)

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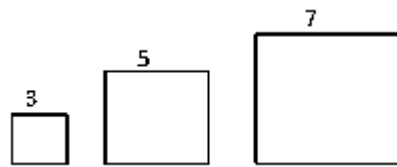


Diagram 19/ Rajah 19

Diagram 19 shows three square cards.

Rajah 19 menunjukkan tiga keping kad berbentuk segiempat sama.

The perimeters of the cards form an arithmetic progression. The terms of the progression are in ascending order.

Perimeter kad-kad itu membentuk suatu jangjang aritmetik. Sebutan-sebutan jangjang itu adalah secara menaik.

(a) Find the 9th term after the 3rd term

Cari sebutan ke -9 selepas sebutan ke-3

[2 marks/ 2 markah]

Answer / Jawapan :

(a)

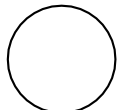
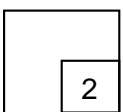


Diagram 20 shows a bomb exploded into four segments, R , S , T and U in which each has a momentum represented by a vector.

Rajah 20 menunjukkan suatu bom yang meletup kepada 4 cebisan, R , S , T dan U dengan keadaan setiap cebisan mempunyai momentum yang diwakili oleh suatu vector.

For
examiner's
use

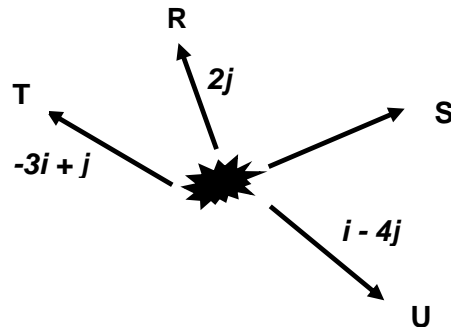


Diagram 20 / Rajah 20

Based on principle of physics, the sum of all momentum vectors is zero vector.

Berdasarkan prinsip fizik, hasil tambah semua vector momentum ialah vector sifar.

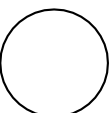
- (a) Find the momentum vector for fragment S in terms of i and j ,
Cari vector momentum bagi cebisan S dalam sebutan i dan j ,
- (b) Hence, calculate the unit vector in the direction of the momentum vector for fragment S .
Seterusnya, hitung vector unit dalam arah bagi vector momentum cebisan S .

[4 marks / 4 markah]

Answer / Jawapan :

(a)

(b)



For
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use

21 Given that, $\int_0^4 h(x)dx = 8$, find

Diberi $\int_0^4 h(x)dx = 8$, cari

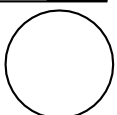
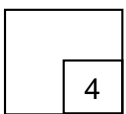
(a) the value of m if $\int_0^2 h(x)dx + \int_2^4 [h(x) + m]dx = 12$

nilai m jika $\int_0^2 h(x)dx + \int_2^4 [h(x) + m]dx = 12$

[3 marks / 3 markah]

Answer / Jawapan :

21



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Lihat halaman sebelah
SULIT

Given $3x^2 - 6x$ is a gradient function of a curve and the turning point of the curve is $(2, 1)$. Find the equation of the curve.

Diberi $3x^2 - 6x$ adalah kecerunan bagi lengkung yang mempunyai titik pusingan pada $(2, 1)$.

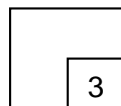
Cari persamaan bagi lengkungan tersebut.

[3 marks / 3 markah]

Answer / Jawapan :

For
examiner's
use

22



23 If α and β are the roots of the quadratic equation $x^2 - 5x + 3 = 0$, form the quadratic equation that has $\frac{2}{\alpha}$ and $\frac{2}{\beta}$ as its roots.

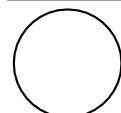
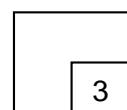
Jika α dan β adalah punca-punca persamaan kuadratik $x^2 - 5x + 3 = 0$, bentukkan

persamaan kuadratik yang mempunyai punca-punca $\frac{2}{\alpha}$ dan $\frac{2}{\beta}$.

[3 marks / 3 markah]

Answer / Jawapan :

23



For
examiner's
use

24

Diagram 24 shows a standard normal distribution graph.

Rajah 24 menunjukkan satu graf taburan normal piawai.

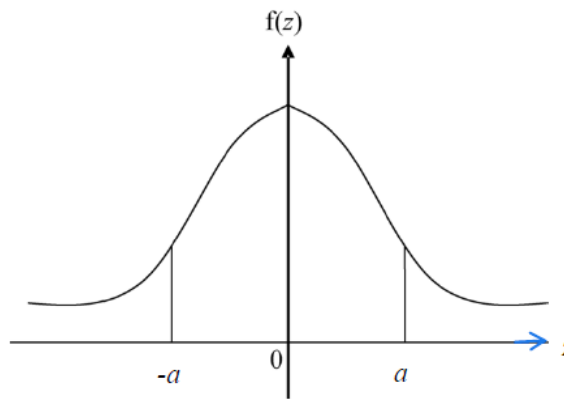


Diagram 24 / Rajah 24

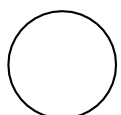
Given $P(-a < z < a) = 0.7698$, find the value of a .

Diberi $P(-a < z < a) = 0.7698$, cari nilai a .

[3 marks / 3 markah]

Answer / Jawapan:

24



3472/1

Lihat halaman sebelah
SULIT

25 Diagram 25 shows the graph of a binomial distribution of X .

Rajah 25 menunjukkan graf taburan binomial X .

*For
examiner's
use*

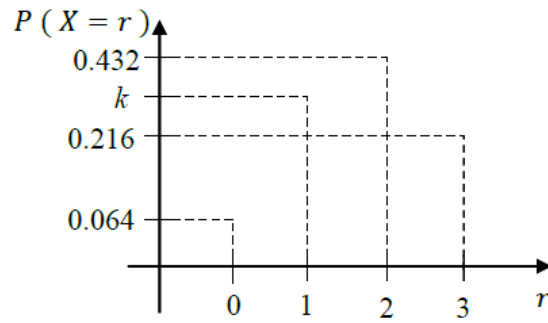


Diagram 25 / Rajah 25

Find

Cari

- (a) $P(X \geq 2)$,
 (b) the value of k .
nilai k .

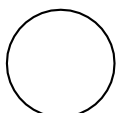
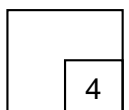
[4 marks /4 markah]

Answer / Jawapan:

(a)

(b)

25



**END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT**