

KEMENTERIAN  
PENDIDIKAN  
MALAYSIA

Jabatan Pendidikan Negeri Terengganu



**MODUL  
PERKEMBANGAN PEMBELAJARAN  
SPM 2020**

**MPP 3**

**MATEMATIK TAMBAHAN  
KERTAS 1**

Nama : .....

Kelas : .....

DISEDIAKAN OLEH PANEL AKRAM NEGERI TERENGGANU

Tidak dibenarkan menyunting atau mencetak mana-mana bahagian dalam modul ini  
tanpa kebenaran Pengarah Pendidikan Negeri Terengganu



**MODUL PERKEMBANGAN PEMBELAJARAN  
MPP3 (PPC) 2020  
TINGKATAN 5**

NAMA : .....

TINGKATAN : .....

**ADDITIONAL  
MATHEMATICS**

**Kertas 1**

Dua jam

**JANGAN BUKA KERTAS SOALAN INI  
SEHINGGA DIBERITAHU**

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

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

Kertas soalan ini mengandungi 26 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

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

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

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

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

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

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

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

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

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

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

$$11. T_n = ar^{n-1}$$

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

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

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### CALCULUS / KALKULUS

$$1. y = uv$$

$$\frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

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

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

$$4. \text{Area under a curve} \\ \text{Luas di bawah lengkung} \\ = \int_a^b y \, dx \text{ or / atau}$$

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

$$5. \text{Volume generated} \\ \text{Isipadu janaan} \\ = \int_a^b \pi y^2 \, dx \text{ or / atau} \\ = \int_a^b \pi x^2 \, dy$$



## STATISTICS / STATISTIK

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

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

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

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

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

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

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

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

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

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

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

12. Mean / Min = np

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

14.  $Z = \frac{X - \mu}{\sigma}$

## GEOMETRI (GEOMETRY)

1. Distance / Jarak

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

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.  $|\mathbf{r}| = \sqrt{x^2 + y^2}$

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



## TRIGONOMETRY / TRIGONOMETRI

1. Arc length,  $s = r\theta$   
Panjang lengkok,  $s = j\theta$
2. Area of sector =  $\frac{1}{2} r^2 \theta$   
Luas sektor,  $L = \frac{1}{2} j^2 \theta$
3.  $\sin^2 A + \cos^2 A = 1$   
 $\sin^2 A + \text{kos}^2 A = 1$
4.  $\sec^2 A = 1 + \tan^2 A$   
 $\text{sek}^2 A = 1 + \tan^2 A$
5.  $\text{cosec}^2 A = 1 + \cot^2 A$   
 $\text{kosek}^2 A = 1 + \text{kot}^2 A$
6.  $\sin 2A = 2 \sin A \cos A$   
 $\sin 2A = 2 \sin A \text{kos} A$
7.  $\cos 2A = \cos^2 A - \sin^2 A$   
 $= 2 \cos^2 A - 1$   
 $= 1 - 2 \sin^2 A$   
 $\text{kos } 2A = \text{kos}^2 A - \sin^2 A$   
 $= 2 \text{kos}^2 A - 1$   
 $= 1 - 2 \sin^2 A$
8.  $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$   
 $\sin(A \pm B) = \sin A \text{kos} B \pm \text{kos} A \sin B$
9.  $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$   
 $\text{kos}(A \pm B) = \text{kos} A \text{kos} B \mp \sin A \sin B$
10.  $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$
11.  $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$
12.  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
13.  $a^2 = b^2 + c^2 - 2bc \cos A$   
 $a^2 = b^2 + c^2 - 2bc \text{kos} A$
14. Area of triangle / Luas segi tiga  
 $= \frac{1}{2} ab \sin C$



For  
examiner's  
use only

Answer **all** questions.  
*Jawab semua soalan.*

- 1 Table 1 shows the amount of shoes sold by a seller by sizes.  
*Jadual 1 menunjukkan bilangan pasang kasut yang dijual oleh seorang penjual mengikut saiz.*

Size <i>Saiz</i>	6	6.5	7	7.5	8	8.5	9
Number <i>Bilangan</i>	6	17	10	11	9	5	7

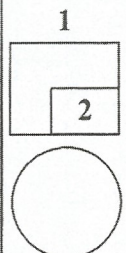
Table 1  
*Jadual 1*

What is the suitable type of the measures of dispersion used by the seller?  
Give your reason.

*Apakah jenis sukatan kecenderungan memusat yang sesuai digunakan oleh penjual?  
Berikan alasan anda.*

[2 marks]  
[2 markah]

Answer/*Jawapan* :





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use only

2 Given  $\int_a^b f(x) dx = 3$  and  $\int_b^c f(x) dx = k$ , find,

Diberi  $\int_a^b f(x) dx = 3$  dan  $\int_b^c f(x) dx = k$ , cari,

(a) the value of  $k$  if  $b = c$ ,  
nilai  $k$  jika  $b = c$ ,

(b)  $\int_a^b f(x) dx - \int_c^b f(x) dx$ , in terms of  $k$ .

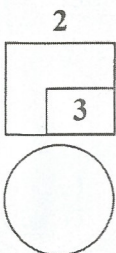
$\int_a^b f(x) dx - \int_c^b f(x) dx$ , dalam sebutan  $k$ .

[3 marks]  
[3 markah]

Answer/Jawapan :

(a)

(b)





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use only

- 3 Three clothes are to be selected from 3 shirts and 5 trousers. Find the number of different ways to choose in which there are more shirts than trousers.

[2 marks]

Tiga pakaian dipilih daripada 3 helai baju dan 5 helai seluar. Cari bilangan cara yang berbeza untuk memilih, jika bilangan baju lebih daripada bilangan seluar. [2 markah]

Answer/Jawapan :

3

2

- 4 Given that  $\frac{d}{dx}\left(\frac{dy}{dx}\right) = 6x - 6$  and the gradient function of a curve is 2 when  $x = 1$ .

Find the equation of the curve which passes through the point  $(2, -1)$ .

Diberi bahawa  $\frac{d}{dx}\left(\frac{dy}{dx}\right) = 6x - 6$  dan fungsi kecerunan bagi suatu lengkung ialah 2 apabila  $x = 1$ . Cari persamaan lengkung yang melalui titik  $(2, -1)$ .

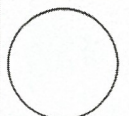
[3 marks]

[3 markah]

Answer/Jawapan :

4

3





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use only

- 5 Diagram 1 shows seven letters written on seven cards.  
*Rajah 1 menunjukkan tujuh huruf ditulis di atas tujuh keping kad.*

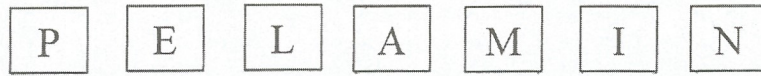


Diagram 1

*Rajah 1*

- (a) Find the possible arrangements, in a row, of all cards.  
*Cari bilangan susunan yang mungkin, dalam sebaris, bagi semua kad itu.*
- (b) Find the number of arrangements which starts with a vowel and ends with a consonant.  
*Cari bilangan susunan yang bermula dengan vokal dan berakhir dengan konsonan.*

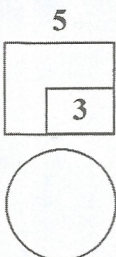
[3 marks]

[3 markah]

Answer/Jawapan :

(a)

(b)





For  
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use only

- 6 A spherical ball with radius  $r$  cm, leaks.  
The surface area,  $A$  cm<sup>2</sup>, is decreasing at the rate of 0.2 cm<sup>2</sup> per minute.  
*Satu bola berbentuk sfera dengan jejari  $r$  cm mengalami kebocoran.  
Luas permukaannya,  $A$  cm<sup>2</sup>, menyusut pada kadar 0.2 cm<sup>2</sup> seminit.*

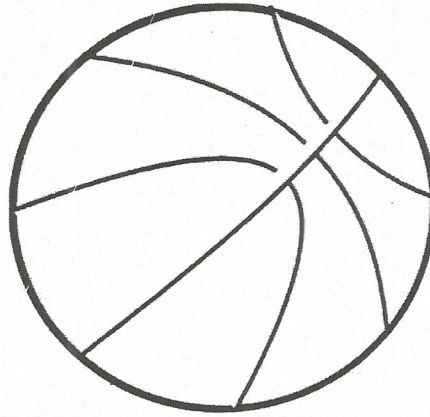


Diagram 2  
Rajah 2

Find the rate of change of the radius of the ball, in terms of  $\pi$ , at the instant when the surface area of the ball is  $\pi$  cm<sup>2</sup>.

*Cari kadar perubahan jejari bola itu, dalam sebutan  $\pi$ , pada ketika luas permukaan bola itu ialah  $\pi$  cm<sup>2</sup>.*

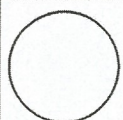
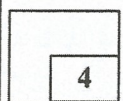
[Surface area of sphere,  $A = 4\pi r^2$ ]

[Luas permukaan sfera,  $A = 4\pi r^2$ ]

[4 marks]  
[4 markah]

Answer/Jawapan :

6





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use only

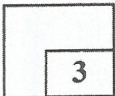
- 7 It is given that  $y = -\frac{3}{x}$ . Find the small change in  $x$ , in terms of  $p$ , when the value of  $y$  changes from 6 to  $6 - p$ .

Diberi bahawa  $y = -\frac{3}{x}$ . Cari perubahan kecil dalam  $x$ , dalam sebutan  $p$ , apabila nilai  $y$  berubah daripada 6 kepada  $6 - p$ .

[3 marks]  
[3 markah]

Answer/Jawapan :

7



- 8 Given the function  $f : x \rightarrow |3x - 2|$ , find

Diberi fungsi  $f : x \rightarrow |3x - 2|$ , cari

(a)  $f(-5)$ ,

- (b) the values of  $x$  such that  $f(x)$  maps onto itself.

nilai-nilai  $x$  dengan keadaan  $f(x)$  memetakan kepada diri sendiri.

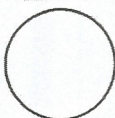
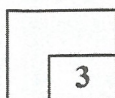
[3 marks]  
[3 markah]

Answer / Jawapan:

(a)

(b)

8





For  
examiner's  
use only

- 9 Diagram 3 shows the intersection of two perpendicular paths in a nursery. Four water sprinklers,  $O$ ,  $A$ ,  $B$  and  $C$  are installed at the positions shown with respect to their shortest distance from both paths.

Rajah 3 menunjukkan persimpangan lorong yang berserenjang dalam sebuah tapak semaian. Empat penyiram air,  $O$ ,  $A$ ,  $B$  dan  $C$  dipasang pada kedudukan seperti yang ditunjukkan merujuk kepada jarak terdekat masing-masing daripada kedua-dua lorong.

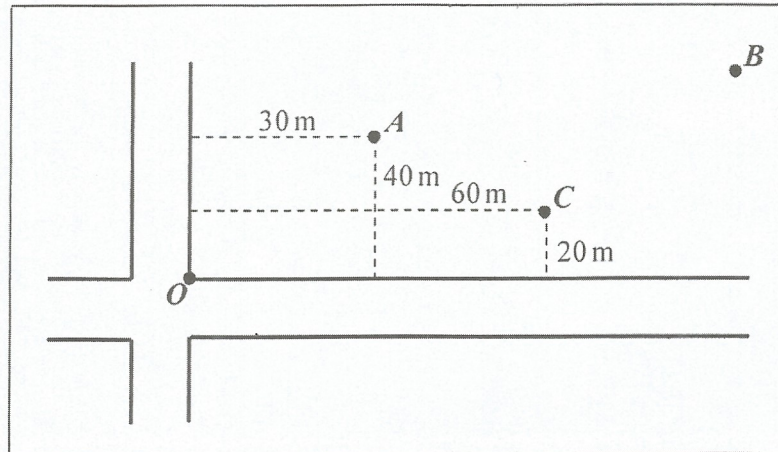


Diagram 3  
Rajah 3

Given that  $OABC$  is a parallelogram.

Diberi bahawa  $OABC$  adalah sebuah segi empat selari.

- (a) If the position of water sprinkler  $O$  is represented by  $(0, -0)$ , state the position of water sprinkler  $A$  and  $C$ ,  
Jika kedudukan penyembur air  $O$  diwakili oleh  $(0, 0)$ , nyatakan kedudukan bagi penyembur air  $A$  dan  $C$ ,
- (b) Find the shortest distance between water sprinkler  $O$  and  $B$ .  
Cari jarak terdekat di antara penyembur air  $O$  dan  $B$ .

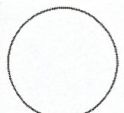
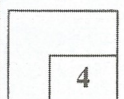
[4 marks]  
[4 markah]

Answer/Jawapan :

(a)

(b)

9





For  
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use only

- 10 A straight line  $y = -2x + 8$  intercept another straight line  $y = h$ ,  $x$ -axis and  $y$ -axis respectively at points  $A$ ,  $B$  and  $C$ . Given that the area of the triangle  $OAC$  is  $12 \text{ unit}^2$ , with  $O$  is the origin, find
- Garis lurus  $y = -2x + 8$  menyilang garis lurus  $y = h$ , paksi- $x$  dan paksi- $y$  masing-masing di titik  $A$ ,  $B$  dan  $C$ . Diberi bahawa luas bagi segi tiga  $OAC$  ialah  $12 \text{ unit}^2$ , dengan  $O$  ialah asalan, cari*

- (a) the coordinates of  $B$ ,  
*koordinat  $B$ ,*
- (b) the value of  $h$ .  
*nilai  $h$ .*

[3 marks]

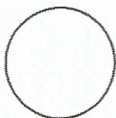
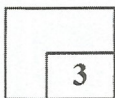
[3 markah]

Answer/Jawapan :

(a)

(b)

10





For  
examiner's  
use only

- 11 Diagram 4 shows a trapezium  $PQRS$  such that  $ST : TQ = 1 : 3$ ,  $\vec{PQ} = 12\vec{x}$  and  $\vec{PS} = 4\vec{y}$ .

Rajah 4 menunjukkan sebuah trapezium  $PQRS$  dengan keadaan  $ST : TQ = 1 : 3$ ,  $\vec{PQ} = 12\vec{x}$  dan  $\vec{PS} = 4\vec{y}$ .

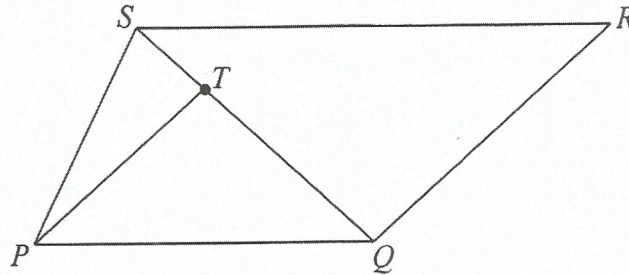


Diagram 4  
Rajah 4

Express in terms of  $\vec{x}$  and  $\vec{y}$

Ungkapkan dalam sebutan  $\vec{x}$  dan  $\vec{y}$

- (a)  $\vec{SQ}$ ,  
(b)  $\vec{PT}$ .

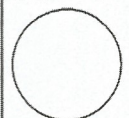
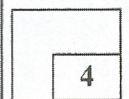
[4 marks]  
[4 markah]

Answer/Jawapan :

(a)

(b)

11





For  
examiner's  
use only

- 12 Diagram 5 shows the mapping of function  $g$  followed by function  $h$ .  
Rajah 5 menunjukkan pemetaan fungsi  $g$  diikuti dengan fungsi  $h$ .

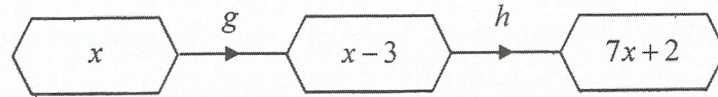


Diagram 5  
Rajah 5

Find the value of

Cari nilai

- (a)  $g^{-1}(4)$ ,  
(b)  $hg(-6)$ .

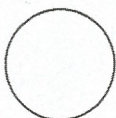
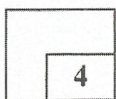
[4 marks]  
[4 markah]

Answer / Jawapan:

(a)

(b)

12





For  
examiner's  
use only

- 13 Diagram 6 shows a function that maps set  $P$  to set  $Q$ .

Rajah 6 menunjukkan fungsi yang memetakan set  $P$  kepada set  $Q$ .

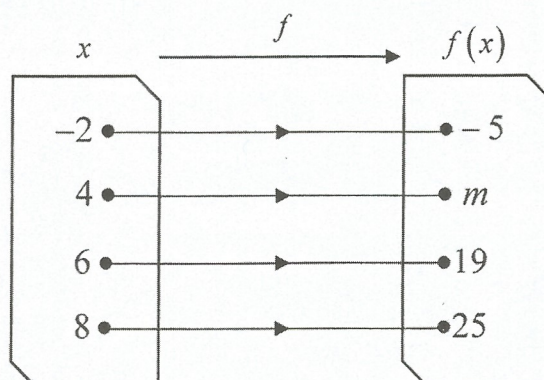


Diagram 6  
Rajah 6

- (a) Find the value of  $m$ .  
*Cari nilai  $m$ .*
- (b) State the range of the relation.  
*Nyatakan julat hubungan itu.*
- (c) Using the function notation, express  $f$  in terms of  $x$ .  
*Dengan menggunakan tatatanda fungsi, ungkapkan  $f$  dalam sebutan  $x$ .*

[3 marks]  
[3 markah]

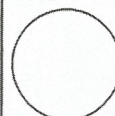
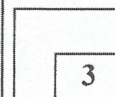
Answer/Jawapan :

(a)

(b)

(c)

13





For  
examiner's  
use only

- 14 A marble was released from a height of  $h$  cm above a surface. The marble will bounce with 75% of its initial height after the marble hits the surface. The height of the marble after  $n$  bounces is given by  $h = 10(0.75)^n$ .

*Sebiji guli dilepaskan pada suatu ketinggian  $h$  cm dari suatu permukaan. Guli itu akan melantun 75% daripada ketinggian asalnya apabila guli menghentam permukaan itu. Ketinggian guli itu selepas  $n$  kali lantunan diberi sebagai  $h = 10(0.75)^n$ .*

Determine the height of the marble, in cm,  
*Tentukan ketinggian guli, dalam cm,*

- (a) when the marble was released,  
*ketika guli itu dilepaskan,*  
(b) after 8 bounces.  
*selepas 8 kali lantunan.*

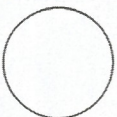
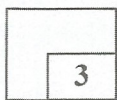
[3 marks]  
[3 markah]

Answer/Jawapan :

(a)

(b)

14





- 15 Given that  $2 \log_3 y = 4 - \log_{27} x^2$ , express  $x$  in terms of  $y$ .

[4 marks]

*Diberi bahawa  $2 \log_3 y = 4 - \log_{27} x^2$ , ungkapkan  $x$  dalam sebutan  $y$ .*

[4 markah]

*Answer/Jawapan :*

*For  
examiner's  
use only*

15

4

- 16 A quadratic equation  $x^2 + px + 9 = 2x$  has two equal roots.

Find the possible values of  $p$ .

[2 marks]

*Suatu persamaan kuadrat mempunyai dua punca sama.*

*Cari nilai-nilai  $p$  yang mungkin.*

[2 markah]

*Answer/Jawapan :*

16

3



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17 Diagram 7 shows the curve  $y = ab^x$ , such that  $a$  and  $b$  are constants.

Rajah 7 menunjukkan graf lengkung  $y = ab^x$ , dengan keadaan  $a$  dan  $b$  ialah pemalar.

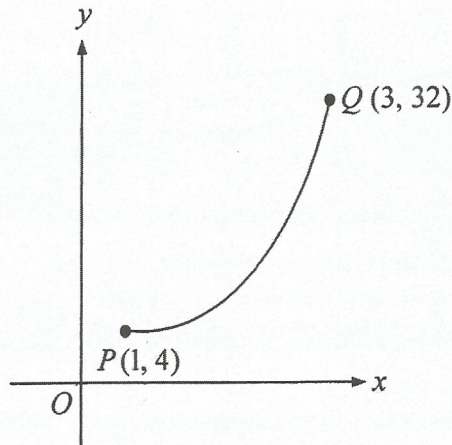


Diagram 7

Rajah 7

(a) When a straight line  $\log_2 y$  against  $x$  are plotted, state the corresponding coordinates of  $P$  and of  $Q$ .

Apabila suatu garis lurus  $\log_2 y$  melawan  $x$  diplotkan, nyatakan koordinat bagi titik  $P$  dan titik  $Q$  yang sepadan.

(b) Express the equation  $y = ab^x$  in its linear form.

Ungkapkan persamaan  $y = ab^x$  dalam bentuk linear.

[4 marks]

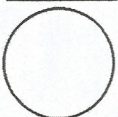
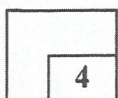
[4 markah]

Answer/Jawapan :

(a)

(b)

17





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- 18 The height,  $h$  meters, achieved by a ball thrown by Daniel is defined by the function  $h(t) = -2t^2 + 4t + 1$  with  $t$  is the time in seconds after the ball is thrown.  
*Tinggi,  $h$  meter, yang dicapai oleh sebiji bola yang dilontarkan oleh Daniel adalah ditakrifkan oleh fungsi  $h(t) = -2t^2 + 4t + 1$  dengan  $t$  ialah masa dalam saat selepas bola itu dilontarkan.*
- (a) Write the function  $h(t)$  in the form  $a(t + p)^2 + q$ .  
*Tuliskan fungsi  $h(t)$  dalam bentuk  $a(t + p)^2 + q$ .*
- (b) (i) Determine the maximum height of the ball.  
*Tentukan ketinggian maksimum bola.*  
(ii) State the range of time before reaching the maximum height.  
*Nyatakan julat masa sebelum mencapai tinggi maksimum.*

[4 marks]

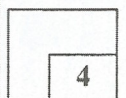
[4 markah]

Answer/Jawapan :

(a)

(b)

18





For  
examiner's  
use only

- 19 Diagram 8 shows a sector  $BCD$  of a circle with centre  $O$ .  
Rajah 8 menunjukkan sektor  $BCD$  sebuah bulatan berpusat  $O$ .

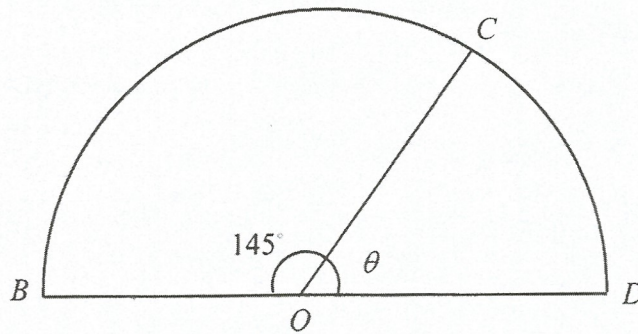


Diagram 8  
Rajah 8

Given the perimeter of the sector  $COD$  is 18.2 cm, calculate  
Diberi perimeter sektor  $COD$  ialah 18.2 cm, hitung  
[use/guna  $\pi = 3.142$ ]

- (a) the value of  $\theta$ , in radians,  
nilai  $\theta$ , dalam radian,  
  
(b) the radius of the sector.  
jejari sektor itu.

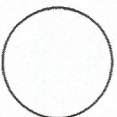
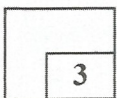
[3 marks]  
[3 markah]

Answer/Jawapan :

(a)

(b)

19





20 Diagram 9 shows part of the graph of  $y = a \sin bx + c$ .

Rajah 9 menunjukkan sebahagian daripada graf  $y = a \sin bx + c$ .

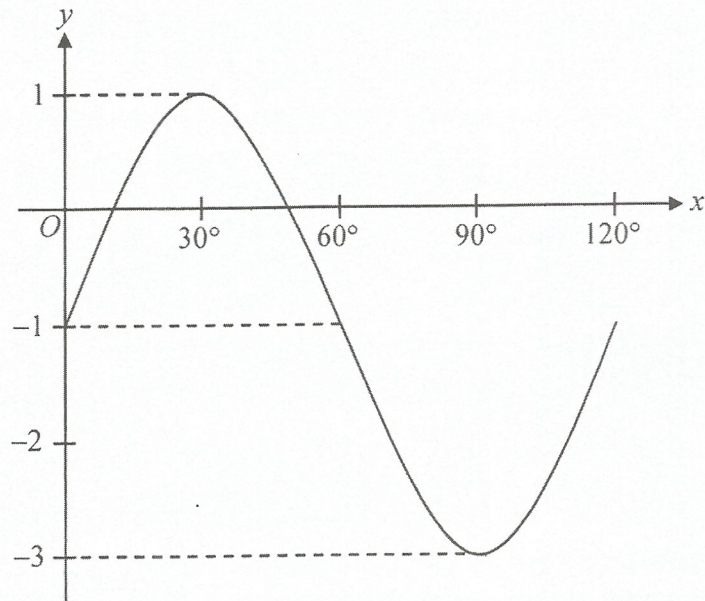


Diagram 9  
Rajah 9

State the value of  
Nyatakan nilai bagi

- (a)  $a$
- (b)  $b$
- (c)  $c$

[ 3 marks ]

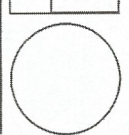
[ 3 markah ]

Answer/Jawapan :

- (a)
- (b)
- (c)

20

3





For  
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- 21 The piece of wire with the length of 155 cm is cut into 10 parts such that the length of the parts form an arithmetic progression. Given that the length of the longest part is 29 cm. Find the length of the shortest part. [2 marks]

*Seutas dawai yang panjangnya 155 cm dipotong kepada 10 bahagian dengan keadaan panjang setiap bahagian membentuk suatu jangjang aritmetik. Diberi bahagian yang terpanjang ialah 29 cm. Cari bahagian terpendek. [2 markah]*

Answer/Jawapan :

21

2

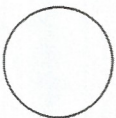
- 22 The random variable  $X$  such that  $X \sim B(n, p)$  with mean 5 and standard deviation 2. Find the values of  $n$  and  $p$ .  
*Pemboleh ubah rawak  $X$  dengan keadaan  $X \sim B(n, p)$  dengan nilai min 5 dan sisihan piawai 2.  
Cari nilai-nilai  $n$  dan  $p$ .*

[ 3 marks ]  
[ 3 markah ]

Answer/Jawapan :

22

3





For  
examiner's  
use only

- 23 A leak has been discovered in an underground main pipe in Bandar A. The water leaks 10 litres for the first hour, 15 litres in the second hour, 20 litres in the third hour and continuously. Given the total quantity of water leaking is 3510 litres.

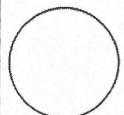
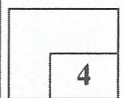
*Satu kebocoran telah dikesan pada saluran paip utama di bawah tanah di Bandar A. Kuantiti air yang telah mengalir keluar ialah 10 liter pada jam pertama, 15 liter pada jam kedua, 20 liter pada jam ketiga dan seterusnya. Diberi jumlah kuantiti air yang telah mengalir ialah 3510 liter.*

Calculate the total quantity of water leaks for the last 5 hours. [4 marks]

*Hitungkan jumlah kuantiti air yang mengalir keluar dalam 5 jam terakhir.* [4 markah]

Answer/Jawapan :

23





For  
examiner's  
use only

24 Natasha will plays against players  $A$ ,  $B$  and  $C$  in a badminton competition.

The probabilities that she will beats  $A$ ,  $B$  and  $C$  are  $\frac{1}{3}$ ,  $\frac{1}{4}$  and  $\frac{4}{5}$  respectively.

*Natasha akan berlawan dengan pemain  $A$ ,  $B$  dan  $C$  dalam satu pertandingan badminton. Kebarangkalian bahawa dia akan mengalahkan  $A$ ,  $B$  dan  $C$  masing-masing ialah  $\frac{1}{3}$ ,  $\frac{1}{4}$  dan  $\frac{4}{5}$ .*

Calculate the probability that

*Hitungkan kebarangkalian bahawa*

- (a) she will beats the three players,  
*dia akan mengalahkan ketiga-tiga orang pemain,*
- (b) she will beats at least two of the three players.  
*dia akan mengalahkan sekurang-kurang dua daripada tiga orang pemain.*

[4 marks ]

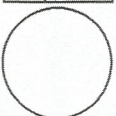
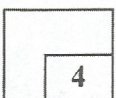
[4 markah ]

Answer/Jawapan :

(a)

(b)

24





- 25 Diagram 10 shows a standard normal distribution graph.  
*Rajah 10 menunjukkan sebuah graf taburan normal piawai.*

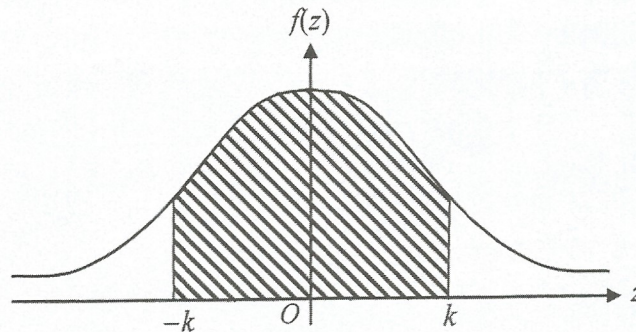


Diagram 10  
*Rajah 10*

The probability represented by the area of the shaded region is 0.37.  
*Kebarangkalian yang diwakili oleh luas rantau berlorek ialah 0.37.*

Find  
*Cari*

- (a)  $P(Z \leq k)$ .  
 (b) the value of  $k$ .  
*nilai  $k$ .*

[ 3 marks ]  
 [ 3 markah ]

Answer/*Jawapan* :

(a)

(b)

END OF QUESTION PAPER  
 KERTAS SOALAN TAMAT

