

For
Examiner's
Use

SULIT

6

3472/1

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

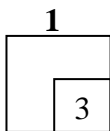
1 A function f is defined by $f : x \rightarrow 3 + \frac{6}{x-1}, x \neq 1$.

Suatu fungsi f ditakrifkan oleh $f : x \rightarrow 3 + \frac{6}{x-1}, x \neq 1$.

Find
Cari

- (a) the image of $2k$,
imej bagi $2k$,
- (b) the object that has image 0.
objek yang mempunyai imej 0.

[3 marks]
[3 markah]



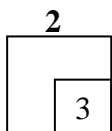
Answer / *Jawapan*: (a)
(b)

2 Given the functions $g : x \rightarrow 4x + 3$ and $fg : x \rightarrow 16x^2 + 24x + 14$, find the function f .

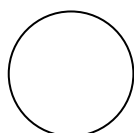
[3 marks]

Diberi fungsi-fungsi $g : x \rightarrow 4x + 3$ dan $fg : x \rightarrow 16x^2 + 24x + 14$, cari fungsi f .

[3 markah]



Answer / *Jawapan*:.....



3472/1

SULIT

SULIT

7

3472/1

*For
Examiner's
Use*

- 3** The quadratic equation $px^2 + 30x + 45 = 0$ has equal roots. Find the value of p .
[2 marks]

*Persamaan kuadratik $px^2 + 30x + 45 = 0$ mempunyai punca-punca yang sama.
Cari nilai p .*

[2 markah]

Answer / Jawapan:

3

2

- 4** It is given that the curve $y = p + (x - r)^2$, where p and r are constants, intersects the x -axis at points $(-4, 0)$ and $(1, 0)$. Find the value of p and of r .
[3 marks]

Diberi bahawa lengkung $y = p + (x - r)^2$, dengan keadaan p dan r adalah pemalar, menyilang paksi- x pada titik-titik $(-4, 0)$ dan $(1, 0)$. Cari nilai p dan nilai r .

[3 markah]

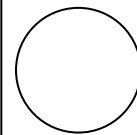
Answer / Jawapan : $p =$
 $r =$

4

3

3472/1

**[Lihat sebelah
SULIT**



For
Examiner's
Use

SULIT

8

3472/1

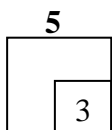
5 Find the range of values of x for which $4x^2 + 12x - 14 < x(2x + 9)$.

[3 marks]

Cari julat nilai x bagi $4x^2 + 12x - 14 < x(2x + 9)$.

[3 markah]

Answer / Jawapan :



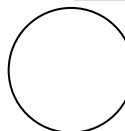
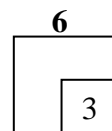
6 Given that $\log_4 y = a$ and $\log_8 2y = b$, find the relation between a and b .

[3 marks]

Diberi bahawa $\log_4 y = a$ dan $\log_8 2y = b$, cari hubungan antara a dan b .

[3 markah]

Answer / Jawapan :



3472/1

SULIT

SULIT

9

3472/1

*For
Examiner's
Use*

7 Solve the equation $6^{x-1} = 3^4 - 3^x$.

[3 marks]

Selesaikan persamaan $6^{x-1} = 3^4 - 3^x$.

[3 markah]

Answer / Jawapan : $x = \dots\dots\dots$

7

3

8 Given that $\log_5 9 + 2 \log_5 k = 0$, find the value of k .

[4 marks]

Diberi bahawa $\log_5 9 + 2 \log_5 k = 0$, cari nilai k .

[4 markah]

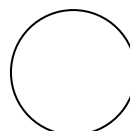
Answer / Jawapan: $k = \dots\dots\dots$

8

4

3472/1

**[Lihat sebelah
SULIT**



For
Examiner's
Use

SULIT

10

3472/1

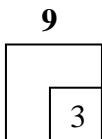
- 9** The first three terms of a geometric progression are $x + 20, x - 4, x - 20$.
Calculate the value of x and the common ratio, r . [3 marks]

*Tiga sebutan yang pertama bagi suatu janjang geometri ialah $x + 20, x - 4, x - 20$.
Hitung nilai x dan nisbah sepunya, r .*

[3 markah]

Answer / Jawapan : $x = \dots\dots\dots$

$r = \dots\dots\dots$

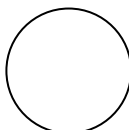
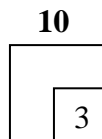


- 10** The n^{th} term of an arithmetic progression, T_n , is given by $T_n = 15 + 5n$.
Find the sum of the first n terms of the progression. [3 marks]

*Sebutan ke- n bagi suatu janjang aritmetik, T_n , diberi oleh $T_n = 15 + 5n$.
Cari hasil tambah n sebutan yang pertama bagi janjang tersebut.*

[3 markah]

Answer / Jawapan : $\dots\dots\dots$



3472/1

SULIT

SULIT

11

3472/1

*For
Examiner's
Use*

- 11** The variables x and y are related by the equation $y\sqrt{x} = ab\sqrt{x} + \frac{b}{\sqrt{x}}$, where a and b are constants. A straight line is obtained by plotting y against $\frac{1}{x}$ and passes through the points $(0, 6)$ and $(-2, 0)$. Find the value of a and of b .

[3 marks]

Pembolehubah x dan y dikaitkan oleh persamaan $y\sqrt{x} = ab\sqrt{x} + \frac{b}{\sqrt{x}}$ dengan keadaan a dan b adalah pemalar. Satu garis lurus diperoleh apabila y diplotkan bertentangan dengan $\frac{1}{x}$ dan melalui titik $(0, 6)$ dan $(-2, 0)$. Cari nilai a dan nilai b .

[3 markah]

Answer / Jawapan : $a = \dots\dots\dots$

$b = \dots\dots\dots$

11

3

- 12** Given that the points $A(2, 4)$, $B(6, 1)$ and $C(p, q)$ are collinear, express p in term of q .

[3 marks]

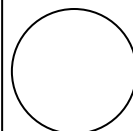
Diberi bahawa titik-titik $A(2, 4)$, $B(6, 1)$ dan $C(p, q)$ adalah segaris, ungkap p dalam sebutan q .

[3 markah]

Answer / Jawapan : $\dots\dots\dots$

12

3



3472/1

**[Lihat sebelah
SULIT**

For
Examiner's
Use

SULIT

12

3472/1

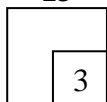
- 13** The points $(3p, p)$ and $(p - 6, 3 - 4p)$ are equidistant from the origin. Calculate the possible values of p .

[3 marks]

Titik-titik $(3p, p)$ dan $(p - 6, 3 - 4p)$ adalah sama jarak dari asalan. Hitung nilai-nilai yang mungkin bagi p .

[3 markah]

13



Answer / Jawapan : $p = \dots\dots\dots$

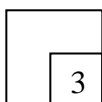
- 14** Given $\underline{a} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$ and $\underline{b} = \begin{pmatrix} 4 \\ -2 \end{pmatrix}$, find the unit vector in the direction of $3\underline{a} + \underline{b}$.

[3 marks]

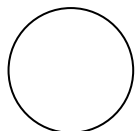
Diberi $\underline{a} = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$ dan $\underline{b} = \begin{pmatrix} 4 \\ -2 \end{pmatrix}$, cari vektor unit dalam arah $3\underline{a} + \underline{b}$.

[3 markah]

14



Answer / Jawapan:



3472/1

SULIT

SULIT

13

3472/1

*For
Examiner's
Use*

- 15** It is given that $\underline{p} = (h + 1)\underline{i} - 2\underline{j}$ and $\underline{q} = -2\underline{i} + (h - 2)\underline{j}$.
If \underline{p} is parallel to \underline{q} , find the possible values of h .

[3 marks]

*Diberi bahawa $\underline{p} = (h + 1)\underline{i} - 2\underline{j}$ dan $\underline{q} = -2\underline{i} + (h - 2)\underline{j}$.
Jika \underline{p} selari dengan \underline{q} , cari nilai-nilai yang mungkin bagi h .*

[3 markah]

Answer / Jawapan :

15



- 16** It is given that $\cos\theta = m$, where θ is an acute angle. Find $\sin\frac{1}{2}\theta$ in term of m .

[3 marks]

*Diberi bahawa $\cos\theta = m$, dengan keadaan θ adalah sudut tirus. Cari $\sin\frac{1}{2}\theta$
dalam sebutan m .*

[3 markah]

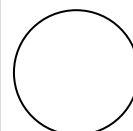
Answer / Jawapan :

16



3472/1

**[Lihat sebelah
SULIT**



SULIT

14

3472/1

For
Examiner's
Use

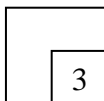
17 Solve the equation $\sin x + \sin 2x = 0$ for $0^\circ \leq x \leq 360^\circ$

[3 marks]

Selesaikan persamaan $\sin x + \sin 2x = 0$ untuk $0^\circ \leq x \leq 360^\circ$.

[3 markah]

17



Answer / Jawapan :

18 Diagram 1 shows a semicircle $ABCD$ centred at O .
Rajah 1 menunjukkan sebuah semibulatan $ABCD$ berpusat di O .

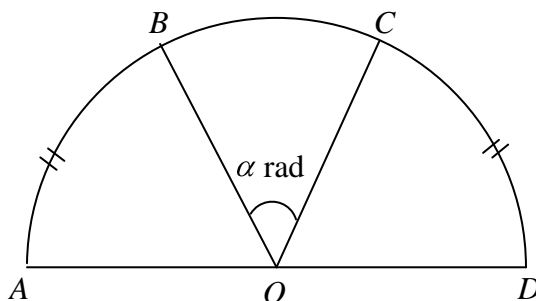


Diagram 1
Rajah 1

It is given that the sum of arc AB and arc CD is equal to the perimeter of sector OBC . Find α , in terms of π .

[4 marks]

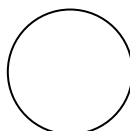
Diberi bahawa jumlah panjang lengkok AB dan lengkok CD adalah sama dengan perimeter sektor OBC . Cari α , dalam sebutan π .

[4 markah]

18



Answer / Jawapan :



3472/1

SULIT

SULIT

15

3472/1

*For
Examiner's
Use*

19 Find the coordinates of the turning points of the curve $y = 2x^3 - 9x^2 + 4$. [3 marks]

Cari koordinat titik-titik pusingan bagi lengkung $y = 2x^3 - 9x^2 + 4$. [3 markah]

Answer / Jawapan :

19

3

20 Find the positive value of t if $\int_1^t x(x+1)(x-1) dx = \frac{1}{4}$. [4 marks]

Cari nilai t yang positif jika $\int_1^t x(x+1)(x-1) dx = \frac{1}{4}$. [4 markah]

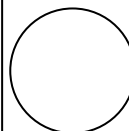
Answer / Jawapan :

20

4

3472/1

**[Lihat sebelah
SULIT**



For
Examiner's
Use

SULIT

16

3472/1

21 Given $\int_1^2 3g(x)dx = 4$, find

Diberi $\int_1^2 3g(x)dx = 4$, cari

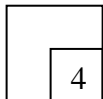
(a) $\int_2^1 g(x)dx$,

(b) the value of the constant h if $\int_1^2 [2g(x) + hx]dx = 11\frac{2}{3}$.

nilai pemalar h jika $\int_1^2 [2g(x) + hx]dx = 11\frac{2}{3}$.

[4 marks]
[4 markah]

21



Answer / Jawapan : (a)

(b)

22 Find the number of different arrangements of all the 10 letters from the word LOGARITHMS if

Cari bilangan susunan yang berlainan bagi semua 10 huruf daripada perkataan LOGARITHMS jika

- (a) the three vowels must be side by side,
tiga huruf vokal mesti bersebelahan,
- (b) the consonants G and H must be separated.
konsonan G dan H mesti dipisahkan.

[4 marks]
[4 markah]

22



Answer / Jawapan : (a)

(b)

3472/1

SULIT

SULIT

17

3472/1

*For
Examiner's
Use*

23 A committee of 5 members is to be formed from 6 men and 4 women. Find the number of different committees that can be formed if

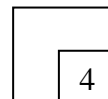
Suatu jawatankuasa 5 orang ahli hendak dibentuk daripada 6 orang lelaki dan 4 orang perempuan. Cari bilangan jawatankuasa berlainan yang dapat dibentuk jika

- (a) there is no restriction,
tiada syarat dikenakan,
- (b) the number of men is more than women.
bilangan lelaki lebih daripada perempuan.

[4 marks]
[4 markah]

Answer / Jawapan : (a)
(b).....

23



24 Bag X contains k red balls and 2 green balls. Bag Y contains 4 red balls and 8 green balls. One ball is randomly chosen from each bag. The probability of getting one red ball and one green ball is $\frac{5}{9}$. Find the value of k .

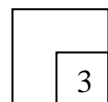
[3 marks]

Beg X mengandungi k bola merah dan 2 bola hijau. Beg Y mengandungi 4 bola merah dan 8 bola hijau. Sebiji bola dipilih secara rawak daripada setiap beg. Kebarangkalian mendapat sebiji bola merah dan sebiji bola hijau ialah $\frac{5}{9}$. Cari nilai k .

[3 markah]

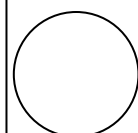
Answer / Jawapan: $k =$

24



3472/1

**[Lihat sebelah
SULIT**



For
Examiner's
Use

SULIT

18

3472/1

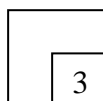
- 25** The probability that Ali scored a goal from a penalty kick in a soccer practice is t . Ali attempts n penalty kicks and the number of goals is recorded. Given that the mean and the standard deviation of the number of goals scored are 60 and 6 respectively, find the value of t and of n .

[3 marks]

Kebarangkalian Ali menjaringkan gol bagi satu tendangan penalti dalam satu latihan bola sepak ialah t . Ali melakukan n tendangan penalti dan bilangan jaringan gol dicatat. Diberi min dan sisihan piawai bagi bilangan jaringan gol masing-masing ialah 60 dan 6, cari nilai t dan nilai n .

[3 markah]

25

Answer / Jawapan : $t = \dots\dots\dots$ $n = \dots\dots\dots$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

3472/1**SULIT**