

SULIT

3472/1



NAMA :

TINGKATAN :

JABATAN PELAJARAN NEGERI TERENGGANU

PEPERIKSAAN PERTENGAHAN TAHUN 2012

3472/1

TINGKATAN 4

MATEMATIK TAMBAHAN

Kertas 1

Mei 2012

2 jam

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DIBERITAHU**

1. *Tulis Nama dan Tingkatan pada ruang yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa.*
3. *Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Melayu atau dalam bahasa Inggeris.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

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

Disediakan oleh:
Guru AKRAM Terengganu

Dengan kerjasama
MPSM Negeri Terengganu

Dibiayai oleh:
Kerajaan Negeri Terengganu

TERENGGANU NEGERI ANJUNG ILMU

Dicetak Oleh:

Percetakan Yayasan Islam Terengganu Sdn. Bhd.

Tel: 609-666 8611/6652/8601 Faks: 609-666 0611/0063

Kertas soalan ini mengandungi 20 halaman bercetak.

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.

ALGEBRA

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

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

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

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

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

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

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

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

GEOMETRI (GEOMETRY)

1. Jarak / *Distance*

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

2. Titik tengah / *Midpoint*

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

3. Titik yang membahagi suatu tembereng garis

A point dividing a segment of a line

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

4. Luas segi tiga / *Area of triangle*

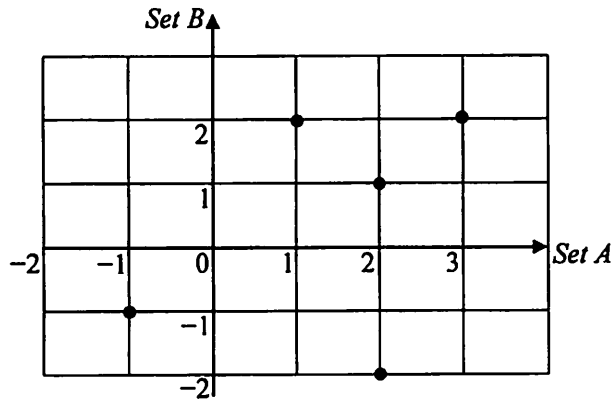
$$\frac{1}{2} |(x_1y_2 + x_2y_3 + x_3y_1) - (x_2y_1 + x_3y_2 + x_1y_3)|$$

*Answer all questions.
Jawab semua soalan.*

*For
examiner's
use*

1 Rajah 1 menunjukkan hubungan set A kepada set B .

Diagram 1 shows the relation of set A to set B .



Rajah 1 / Diagram 1

Nyatakan / State

(a) imej bagi 2,

the image of 2,

(b) julat bagi hubungan itu.

the range of the relation.

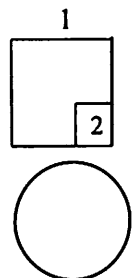
[2 markah]

[2 marks]

Jawapan/ Answer :

(a)

(b)



For
examiner's
use

- 2 Hubungan di antara set A dan set B ditakrifkan oleh pasangan tertib,
 $\{(3,6), (4,8), (6,12), (6,6), (8,16)\}$
The relation between set A and set B is defined by a set of ordered pairs,
 $\{(3,6), (4,8), (6,12), (6,6), (8,16)\}$.

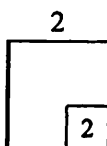
Nyatakan / State

- (a) objek bagi 6,
the object of 6,
- (b) jenis hubungan itu.
the type of the relation.

[2 markah]

[2 marks]

Jawapan / Answer :



(a)

(b)

- 3 Fungsi f ditakrifkan oleh $f(x) = \frac{2-x}{5}$,
The function f is defined as $f(x) = \frac{2-x}{5}$,

Cari/Find

- (a) $f^{-1}(x)$
- (b) $f^{-1}(3)$

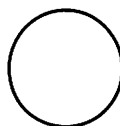
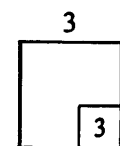
[3 markah]

[3 marks]

Jawapan/ Answer :

(a)

(b)



4 Diberi $f(x) = 2x - 3$ dan $fg(x) = 4x - 5$, cari
 Given that $f(x) = 2x - 3$ and $fg(x) = 4x - 5$, find

- (a) $g(x)$
- (b) nilai bagi k , jika $g(k) = k$
 the values of k if $g(k) = k$

[4 markah]

[4 marks]

Jawapan/ Answer :

(a)

(b)

For
 examiner's
 use

4

	4
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5 Maklumat berikut adalah berkaitan dengan fungsi g dan fungsi gubahan g^2 .

The following information is about the function g and the composite function g^2 .

- (i) $g : x \rightarrow ax + b$, dengan keadaan a dan b adalah pemalar, dan $a > 0$
 $g : x \rightarrow ax + b$, where a and b are constants, and $a > 0$.
- (ii) $g^2 : x \rightarrow 16x - 10$

Cari nilai a dan nilai b .

[3 markah]

Find the value of a and of b .

[3 marks]

Jawapan/ Answer :

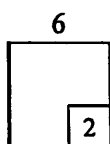
5

	3
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For
examiner's
use

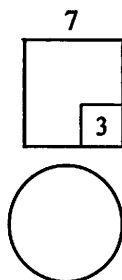
- 6 Ungkapkan persamaan kuadrat $x - 2 = (2x - 3)(x + 5)$ dalam bentuk am. [2 markah]
 Express the quadratic equation $x - 2 = (2x - 3)(x + 5)$ in the general form. [2 marks]

Jawapan/ Answer :



- 7 Suatu persamaan kuadrat $x^2 + kx + 16 = 4x$ mempunyai dua punca sama. [3 markah]
 Cari nilai-nilai k . [3 marks]
 A quadratic equation $x^2 + kx + 16 = 4x$ has two equal roots. Find the values of k . [3 marks]

Jawapan/ Answer :



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- 8 Suatu persamaan kuadrat $3x^2 - 4x + 1 = 0$ mempunyai punca-punca α dan β .

Bentukkan persamaan kuadrat yang mempunyai punca-punca 2α dan 2β .

[4 markah]

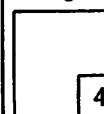
A quadratic equation $3x^2 - 4x + 1 = 0$ has roots α and β . Form a quadratic equation which has roots 2α and 2β .

[4 marks]

Jawapan/ Answer :

For
examiner's
use

8



- 9 Selesaikan persamaan kuadrat $3(8x - 7) = 4(x - 1)^2$. Tuliskan jawapan anda betul kepada empat angka bererti.

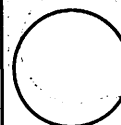
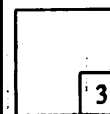
[3 markah]

Solve the quadratic equation $3(8x - 7) = 4(x - 1)^2$. Give your answer correct to four significant figures.

[3 marks]

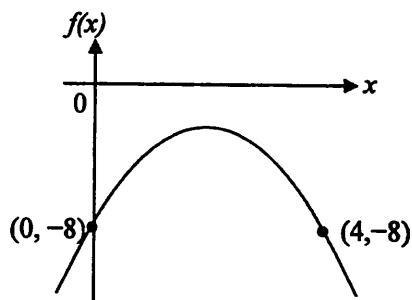
Jawapan/ Answer :

9



For
examiner's
use

10



Rajah 10 / Diagram 10

Rajah 10 menunjukkan graf fungsi $f(x) = -(x - p)^2 - 2$, dengan keadaan p ialah pemalar.

Diagram 10 shows a graph function $f(x) = -(x - p)^2 - 2$, where p is a constant.

Cari / Find

- (a) nilai p ,
the value of p ,
- (b) persamaan paksi simetri,
the equation of the axis of symmetry,
- (c) koordinat bagi titik maksimum.
the coordinates of maximum point.

[3 markah]

[3 marks]

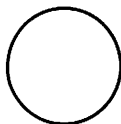
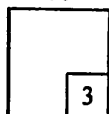
Jawapan/ Answer :

(a)

(b)

(c)

10



11 Cari julat nilai x bagi $3x^2 - 8x + 4 \leq x(2x - 3)$.

[3 markah]

For
examiner's
use

Find the range of values of x for $3x^2 - 8x + 4 \leq x(2x - 3)$.

[3 marks]

Jawapan/ Answer :

11
3

12 Diberi fungsi kuadratik $g(x) = (m - 1)x^2 - 4x + 2m$ tidak menyalang paksi- x .

Tentukan julat nilai bagi m .

[4 markah]

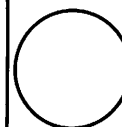
Given the quadratic function $g(x) = (m - 1)x^2 - 4x + 2m$ does not intersect

the x -axis. Determine the range of values of m .

[4 marks]

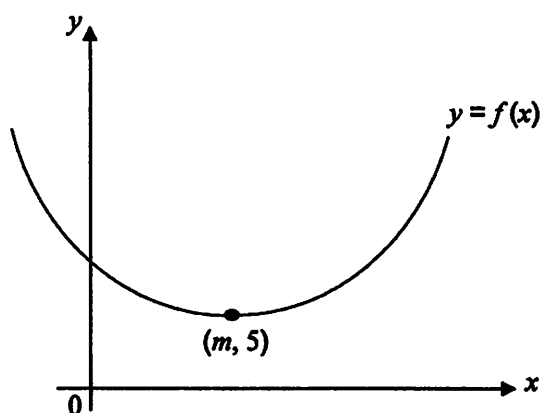
Jawapan/ Answer :

12
4



For
examiner's
use

13



Rajah 13 / Diagram 13

Rajah 13 menunjukkan graf fungsi kuadratik $f(x) = (x - 3)^2 + n$, dengan k ialah pemalar.
Diagram 13 shows quadratic function graph $f(x) = (x - 3)^2 + n$, where k is a constant.

Cari nilai bagi

Find the value of

- (a) m
- (b) n
- (c) persamaan paksi simetri
the equation of the axis of symmetry

[3 markah]

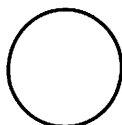
[3 marks]

Jawapan / Answer :

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

13

3



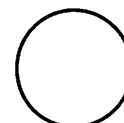
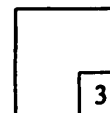
- 14 Cari nilai-nilai yang mungkin bagi k jika luas segitiga PQR dengan bucu $P(6, 2)$, $Q(-2, 2)$ dan $R(2k, k)$ ialah 20 unit². [3 markah]

For
examiner's
use

Find the possible values of k if the area of a triangle PQR with the vertices $P(6, 2)$, $Q(-2, 2)$ and $R(2k, k)$ is 20 unit². [3 marks]

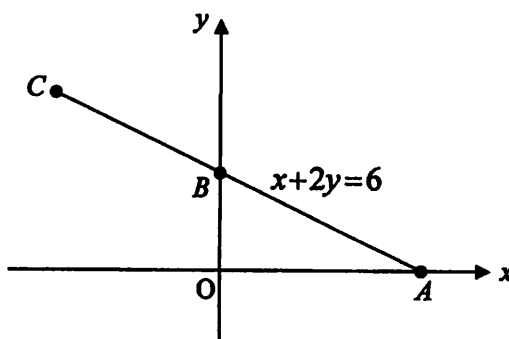
Jawapan / Answer :

14



*For
examiner's
use*

- 15 Rajah 15 menunjukkan satu garis lurus ABC dengan persamaan $x + 2y = 6$. Titik A dan B masing-masing adalah pintasan- x dan pintasan- y . B ialah titik tengah A dan C .
Diagram 15 shows a straight line ABC with the equation $x + 2y = 6$. Points A and B are the x -intercept and the y -intercept respectively. B is the midpoint of point A and C .



Rajah 15 / Diagram 15

Cari / Find

- (a) koordinat C ,
the coordinates of C ,
 (b) panjang AB .
length of AB .

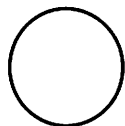
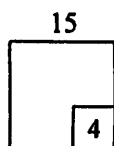
[4 markah]

[4 marks]

Jawapan / Answer :

(a)

(b)



For
examiner's
use

16 Diberi garis lurus AB , $\frac{x}{p} + \frac{y}{3} = 1$ dengan 5 sebagai pintasan- x . AB adalah selari dengan garis lurus $y - qx = -1$.

Given a straight line AB , $\frac{x}{p} + \frac{y}{3} = 1$ has an x -intercept of 5. AB is parallel to the straight line $y - qx = -1$.

(a) Nyatakan pintasan- y bagi garis lurus AB
State the y -intercept of the straight line AB

(b) Tentukan nilai p dan nilai q .
Determine the value of p and of q .

[4 markah]

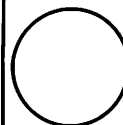
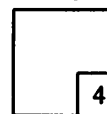
[4 marks]

Jawapan / Answer :

(a)

(b)

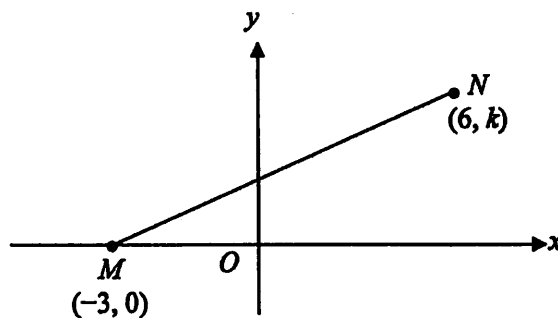
16



For
examiner's
use

17 Rajah 17 menunjukkan garis lurus MN.

Diagram 17 shows a straight line MN.



Rajah 15 / Diagram 15

(a) Diberi bahawa kecerunan bagi garis lurus MN ialah $\frac{1}{3}$, cari nilai k

Given that the gradient of the line MN is $\frac{1}{3}$, find the value of k

(b) Tulis persamaan garis lurus yang melalui titik M dan berserenjang dengan garis MN.

[4 markah]

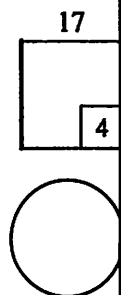
Write the equation of the straight line that passes through point M and perpendicular to MN.

[4 marks]

Jawapan/ Answer :

(a)

(b)



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18 Cari persamaan lokus bagi titik P yang bergerak dengan keadaan jaraknya sentiasa 5 unit dari titik $A(2,4)$

[3 markah]

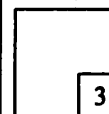
For
examiner's
use

Find the equation of locus of moving point P with the distance from $A(2,4)$ always 5 units.

[3 marks]

Jawapan/ Answer :

18



19 Ringkaskan $\frac{3^{4n-1} \times 27}{9^{n+1}}$

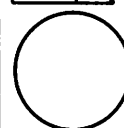
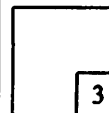
[3 markah]

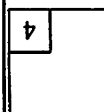
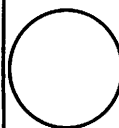
Simplify $\frac{3^{4n-1} \times 27}{9^{n+1}}$

[3 marks]

Jawapan / Answer :

19

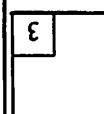




21

Jawapan/Answer :

- 21 Ungkapkan dalam sebutan teringkas bagi $4^n + 4^{n+1} - 2(4^{n-1})$.
 Express in the simplest term $4^n + 4^{n+1} - 2(4^{n-1})$.
 [4 marks] [4 marks]



20

Jawapan/Answer :

- 20 Selesaikan persamaan $4^{1-2p} = \frac{1}{8^{p+1}}$
 Solve the equation $4^{1-2p} = \frac{1}{8^{p+1}}$
 [3 marks] [3 marks]

For
examiner's
use

22 Diberi bahawa $\log_2 x = h$, cari dalam sebutan h .

Given that $\log_2 x = h$, find in terms of h .

(a) x

(b) $\log_2 8x$

[3 markah]

[3 marks]

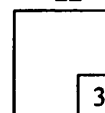
Jawapan / Answer :

(a)

(b)

For
examiner's
use

22



23 Selesaikan persamaan $\log_3 x^3 = 2 + \log_3 x^2$.

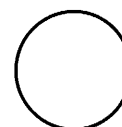
[3 markah]

Solve the equation $\log_3 x^3 = 2 + \log_3 x^2$.

[3 marks]

Jawapan / Answer :

23



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For
examiner's
use

24 Diberi $4 \log_x 2 + 2 \log_x 3 - \log_x 18 = 3$, cari nilai x .

[3 markah]

Given that $4 \log_x 2 + 2 \log_x 3 - \log_x 18 = 3$, find the value of x .

[3 marks]

Jawapan / Answer :

24

3

25 Selesaikan persamaan $\log_2 x + \log_4 x = 3$.

[4 markah]

Solve the equation $\log_2 x + \log_4 x = 3$.

[4 marks]

Jawapan/ Answer :

25

4

KERTAS SOALAN TAMAT

END OF QUESTION PAPER

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HALAMAN KOSONG

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INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. Kertas soalan ini mengandungi 25 soalan.
This question paper consists of 25 questions.
2. Jawab **semua** soalan.
Answer all questions.
3. Tulis jawapan anda dalam ruang yang disediakan dalam kertas soalan.
Write your answers in the spaces provided in the question paper.
4. Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ia boleh membantu anda untuk mendapatkan markah.
Show your working. It may help you to get marks.
5. Sekiranya anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.
If you wish to change your answer, cross out the answer work that you have done. Then write down the new answer.
6. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
The diagrams in the questions provided are not drawn to scale unless stated.
7. Markah yang diperuntukkan bagi setiap soalan ditunjukkan dalam kurungan.
The marks allocated for each question are shown in brackets.
8. Satu senarai rumus disediakan di halaman 2.
A list of formulae is provided on page 2.
9. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.
You may use a non-programmable scientific calculator.
10. Serahkan kertas soalan ini kepada pengawas peperiksaan di akhir peperiksaan.
Hand in this question paper to the invigilator at the end of the examination.