

NAMA : .....

TINGKATAN : .....



## JABATAN PELAJARAN NEGERI TERENGGANU

### PEPERIKSAAN PERCUBAAN SPM 2011 ADDITIONAL MATHEMATICS

3472/1

Kertas 1  
Ogos 2011  
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 Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau dalam 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	3	
7	3	
8	3	
9	3	
10	4	
11	4	
12	3	
13	4	
14	3	
15	3	
16	3	
17	3	
18	4	
19	3	
20	3	
21	3	
22	4	
23	4	
24	4	
25	3	
<b>Jumlah</b>	<b>80</b>	

*Disediakan oleh:*  
AKRAM NEGERI 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### CALCULUS / KALKULUS

$$1. y = uv$$

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

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

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

$$4. \text{Area under a curve}$$

*Luas di bawah lengkung*

$$= \int_a^b y \, dx \quad \text{or / atau}$$

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

$$5. \text{Volume generated}$$

*Isipadu janaan*

$$= \int_a^b \pi y^2 \, dx \quad \text{or / atau}$$

$$= \int_a^b \pi x^2 \, dy$$

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

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*  
 $= \frac{1}{2} ab \sin C$

Answer all questions.

Jawab semua soalan.

- 1 Diagram 1 shows the relation between set  $X$  and set  $Y$ .  
Rajah 1 menunjukkan hubungan antara set  $X$  dan set  $Y$ .

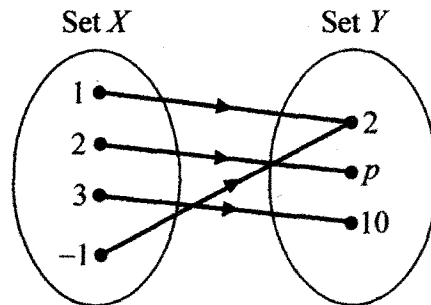


Diagram 1 / Rajah 1

- (a) State the value of  $p$ .  
Nyatakan nilai  $p$ .
- (b) Using the function notation, write a relation between set  $X$  and set  $Y$ .  
Dengan menggunakan tata tanda fungsi, tulis satu hubungan antara set  $X$  dan set  $Y$ .

[2 marks]

[2 markah]

Answer / Jawapan :

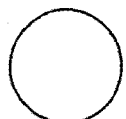
(a)

(b)

For  
Examiner's  
Use

1

2
---



For  
Examiner's  
Use

- 2 Given the functions  $g : x \rightarrow 3x - 2$  and  $h : x \rightarrow \frac{4}{x+2}$ ,  $x \neq p$ , where  $p$  is a constant.

Diberi fungsi  $g : x \rightarrow 3x - 2$  dan  $h : x \rightarrow \frac{4}{x+2}$ ,  $x \neq p$ , dengan keadaan  $p$  ialah pemalar.

- (a) Determine the value of  $p$ .  
Tentukan nilai  $p$ .
- (b) Find the value of  $hg(2)$ .  
Cari nilai  $hg(2)$ .

[3 marks]

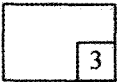
[3 markah]

Answer / Jawapan :

(a)

(b)

2



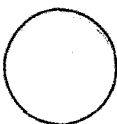
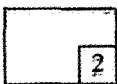
- 3 Form the quadratic equation which has the roots  $-5$  and  $\frac{2}{3}$ . Give your answer in the form  $ax^2 + bx + c = 0$ , where  $a$ ,  $b$  and  $c$  are constants. [2 marks]

Bentukkan persamaan kuadratik yang mempunyai punca-punca  $-5$  dan  $\frac{2}{3}$ .

Beri jawapan anda dalam bentuk  $ax^2 + bx + c = 0$ , dengan keadaan  $a$ ,  $b$  dan  $c$  ialah pemalar. [2 markah]

Answer / Jawapan :

3



- 4 Find the range of values of  $p$  if  $3x^2 - 2x = 1 - p$  has two different roots.

[3 marks]

*Cari julat nilai  $p$  jika  $3x^2 - 2x = 1 - p$  mempunyai dua punca berbeza.*

[3 markah]

*Answer / Jawapan :*

For  
Examiner's  
Use

4

3

- 5 Find the range of values of  $x$  if  $2x^2 - x - 15 < 0$ .

[3 marks]

*Cari julat nilai  $x$  jika  $2x^2 - x - 15 < 0$ .*

[3 markah]

*Answer / Jawapan :*

5

3



For  
Examiner's  
Use

- 6 Diagram 6 shows the graph of the function  $y = m(x - 2)^2 + k$  where  $m$  and  $k$  are constants.

Rajah 6 menunjukkan graf fungsi  $y = m(x - 2)^2 + k$  dengan keadaan  $m$  dan  $k$  adalah pemalar.

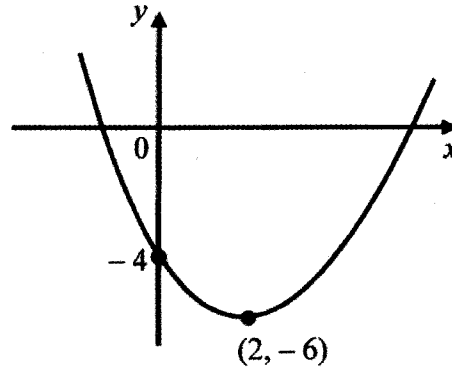


Diagram 6 / Rajah 6

- (a) State the equation of the axis of symmetry.  
*Nyatakan persamaan paksi simetri.*
- (b) Find the value of  $k$  and of  $m$ .  
*Cari nilai  $k$  dan nilai  $m$ .*

[3 marks]

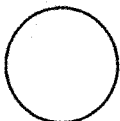
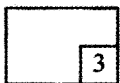
[3 markah]

Answer / Jawapan :

(a)

(b)

6



- 7 Given that the triangle with vertices  $P(3, 2)$ ,  $Q(7, -2)$  and  $R(6, k)$  has the area of  $12 \text{ unit}^2$ . Find the possible values of  $k$ . [3 marks]

*Diberi sebuah segitiga dengan bucu-bucu  $P(3, 2)$ ,  $Q(7, -2)$  dan  $R(6, k)$  mempunyai keluasan  $12 \text{ unit}^2$ . Cari nilai-nilai yang mungkin bagi  $k$ . [3 markah]*

Answer / Jawapan :

For  
Examiner's  
Use

7

3

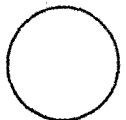
- 8 Solve the equation  $32^x = \frac{1}{8^{x-1}}$ . [3 marks]

*Selesaikan persamaan  $32^x = \frac{1}{8^{x-1}}$ . [3 markah]*

Answer / Jawapan :

8

3



For  
Examiner's  
Use

9 Given  $\log_3(x^2 y) = 2 + \log_3 x$ , express  $y$  in terms of  $x$ .

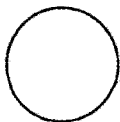
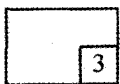
[3 marks]

Diberi  $\log_3(x^2 y) = 2 + \log_3 x$ , ungkapkan  $y$  dalam sebutan  $x$ .

[3 markah]

Answer / Jawapan :

9



10 Solve the equation  $5 + 2 \log_3 P = 2 \log_9 27$ .

[4 marks]

*Selesaikan persamaan  $5 + 2 \log_3 P = 2 \log_9 27$ .*

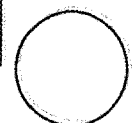
[4 markah]

For  
Examiner's  
Use

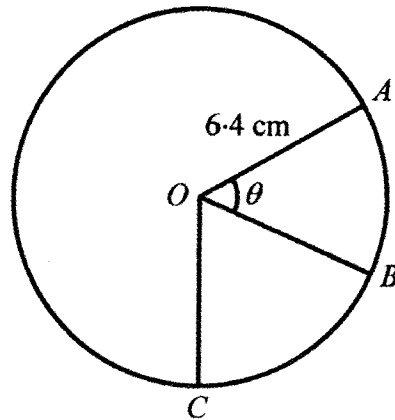
Answer / Jawapan :

10

4



- 11 Diagram 11 shows a circle with centre  $O$ .  
*Rajah 11 menunjukkan sebuah bulatan berpusat  $O$ .*



**Diagram 11 / Rajah 11**

The length of the minor arc  $AB$  is 4.8 cm and the angle of the minor sector  $BOC$  is 1 rad.

*Panjang lengkok minor  $AB$  ialah 4.8 cm dan sudut sektor minor  $BOC$  ialah 1 rad.*

Using  $\pi = 3.142$ , find

*Dengan menggunakan  $\pi = 3.142$ , cari*

- (a) the value of  $\theta$ , in radians,  
*nilai  $\theta$ , dalam radian,*
- (b) the length, in cm, of the major arc  $AC$ .  
*panjang, dalam cm, lengkok major  $AC$ .*

[4 marks]

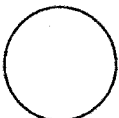
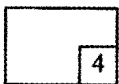
[4 markah]

Answer / Jawapan :

(a)

(b)

11



12 A set of five numbers has a mean of 12.  
*Satu set lima nombor mempunyai min 12.*

(a) Find the sum of these five numbers.  
*Cari jumlah lima nombor itu.*

(b) When a number  $h$  is removed from the set, the new mean is 11.5.  
*Apabila satu nombor  $h$  dikeluarkan daripada set ini, min baru ialah 11.5.*

Find the value of  $h$ .  
*Cari nilai  $h$ .*

[3 marks]

[3 markah]

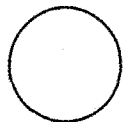
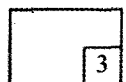
Answer / Jawapan :

(a)

(b)

For  
Examiner's  
Use

12



For  
Examiner's  
Use

- 13 The sum of the first three terms of an arithmetic progression that has the common difference  $-3$  is  $117$ .  
*Hasil tambah tiga sebutan pertama suatu jantang aritmetik yang mempunyai beza sepunya  $-3$  ialah  $117$ .*

Calculate / *Hitung*

- (a) the first term,  
*sebutan pertama,*
- (b) the sum from the fifth term to the seventh term.  
*hasil tambah dari sebutan kelima hingga sebutan ketujuh.*

[4 marks]

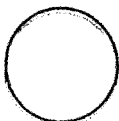
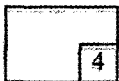
[4 markah]

Answer / *Jawapan :*

(a)

(b)

13



- 14 The first three terms of a geometric progression are  $81x$ ,  $27x$ ,  $9x$ .  
*Tiga sebutan pertama suatu jangjang geometri ialah  $81x$ ,  $27x$ ,  $9x$ .*

Find / Cari

- (a) the common ratio,  
*nisbah sepunya,*
- (b) the sum to infinity of the geometric progression if  $x = 2$ .  
*hasil tambah ketakterhinggaan jangjang geometri itu jika  $x = 2$ .*

[3 marks]  
[3 markah]

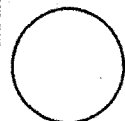
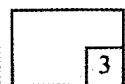
Answer / Jawapan :

(a)

(b)

For  
Examiner's  
Use

14



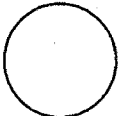
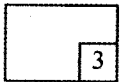
For  
Examiner's  
Use

15 Given the gradient of the normal to the curve  $y = \frac{k}{1-2x}$  at  $x = 2$  is  $\frac{1}{2}$ ,  
calculate the value of  $k$ . [3 marks]

Diberi kecerunan normal kepada lengkung  $y = \frac{k}{1-2x}$  di  $x = 2$  ialah  $\frac{1}{2}$ ,  
hitung nilai  $k$ . [3 markah]

Answer / Jawapan :

15



- 16 A piece of copper wire is bent to form a circle with the radius 3 cm. When the wire is heated, its radius increased by 0.03 cm.  
*Seutas dawai kuprum dibengkokkan untuk membentuk sebuah bulatan dengan jejari 3 cm. Apabila dawai tersebut dipanaskan, jejari bulatan bertambah sebanyak 0.03 cm.*

For  
Examiner's  
Use

Find / Cari

- (a) the small change in the area of the circle,  
*perubahan kecil bagi luas bulatan,*
- (b) the approximate new value of the area of the circle.  
*anggaran nilai luas bulatan yang baru.*

[3 marks]

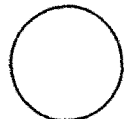
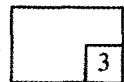
[3 markah]

Answer / Jawapan :

(a)

(b)

16



For  
Examiner's  
Use

17 Find  $\int \frac{(x-3)(x+3)}{x^2} dx$ .

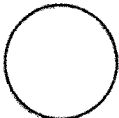
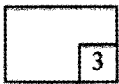
[3 marks]

Cari  $\int \frac{(x-3)(x+3)}{x^2} dx$

[3 markah]

Answer / Jawapan :

17



18 Given  $\int_2^5 h(x) dx = 3$ , find  
Diberi  $\int_2^5 h(x) dx = 3$ , cari

(a)  $\int_2^5 2h(x) dx$ ,

(b) the value of  $k$  if  $\int_2^5 [4h(x) - kx] dx = 5$ .

nilai  $k$  jika  $\int_2^5 [4h(x) - kx] dx = 5$ .

Answer / Jawapan :

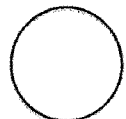
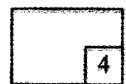
(a)

(b)

For  
Examiner's  
Use

[4 marks]  
[4 markah]

18



For  
Examiner's  
Use

- 19 The variables  $x$  and  $y$  are related by the equation  $y = x(hx^2 + 8x)$ , where  $h$  is a constant.

Diagram 19 shows the straight line obtained by plotting  $\frac{y}{x^2}$  against  $x$ .

Pemboleh ubah  $x$  dan  $y$  dihubungkan oleh persamaan  $y = x(hx^2 + 8x)$ , dengan keadaan  $h$  ialah pemalar. Rajah 19 menunjukkan graf garis lurus yang diperolehi dengan memplot  $\frac{y}{x^2}$  melawan  $x$ .

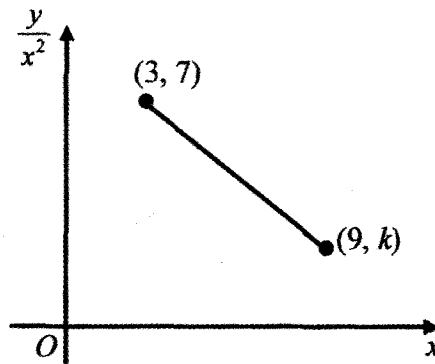


Diagram 19 / Rajah 19

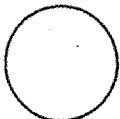
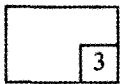
Find the value of  $h$  and of  $k$ .  
Cari nilai  $h$  dan nilai  $k$ .

[3 marks]

[3 markah]

Answer / Jawapan :

19



20 Given  $O(0, 0)$ ,  $P(-4, 1)$  and  $Q(1, -5)$  are three points in a Cartesian plane.

Diberi  $O(0, 0)$ ,  $P(-4, 1)$  dan  $Q(1, -5)$  adalah tiga titik dalam satah Cartesian.

Find / Cari

- (a)  $\vec{PQ}$ , in terms of  $\underline{i}$  and  $\underline{j}$ ,  
 $\vec{PQ}$ , dalam sebutan  $\underline{i}$  dan  $\underline{j}$ ,
- (b) the unit vector in the direction of  $\vec{PQ}$ .  
vektor unit dalam arah  $\vec{PQ}$ .

[3 marks]  
[3 markah]

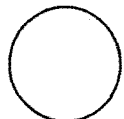
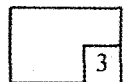
Answer / Jawapan :

(a)

(b)

For  
Examiner's  
Use

20



For  
Examiner's  
Use

- 21 A box  $X$  contains 4 blue marbles and 4 green marbles and a second box  $Y$  contains 3 blue marbles and 6 yellow marbles. A marble is drawn randomly from each box. Find the probability that the two marbles drawn

*Sebuah kotak  $X$  mengandungi 4 guli biru dan 4 guli hijau dan kotak kedua,  $Y$  mengandungi 3 guli biru dan 6 guli kuning. Sebiji guli dicabut secara rawak daripada setiap kotak.*

*Cari kebarangkalian bahawa kedua-dua biji guli yang dicabut itu*

- (a) are of the same colour,  
*sama warna,*  
(b) are of different colours.  
*berlainan warna.*

[3 marks]

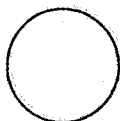
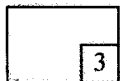
[3 markah]

Answer / Jawapan :

(a)

(b)

21



- 22 An Olympiad Mathematics team from SMK Bestari consists of 6 students. The team will be chosen from 7 boys and 5 girls. Find the number of teams that can be formed such that each team consists of

*Sebuah pasukan Olimpiad Matematik dari SMK Bestari terdiri daripada 6 orang pelajar. Pasukan itu akan dipilih daripada 7 pelajar lelaki dan 5 pelajar perempuan. Cari bilangan pasukan yang dapat dibentuk dengan syarat setiap pasukan terdiri daripada*

- (a) 4 boys,  
4 pelajar lelaki,
- (b) not more than 2 girls.  
tidak lebih daripada 2 pelajar perempuan.

[4 marks]

[4 markah]

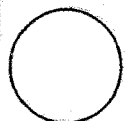
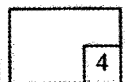
Answer / Jawapan :

(a)

(b)

For  
Examiner's  
Use

22



For  
Examiner's  
Use

- 23 Diagram 23 shows seven cards of different letters.  
*Rajah 23 menunjukkan tujuh keping kad yang berlainan huruf.*



**Diagram 23 / Rajah 23**

A four-letter code is to be formed using four of these cards. Find  
*Suatu kod empat huruf hendak dibentuk dari kad-kad tersebut. Cari*

- (a) the number of different arrangements that can be formed,  
*bilangan susunan yang berlainan yang dapat dibentuk,*
- (b) the number of different arrangements where it starts with a vowel and ends with a consonant.  
*bilangan susunan yang berlainan yang dapat dibentuk dengan syarat ia bermula dengan huruf vokal dan berakhir dengan huruf konsonan.*

[4 marks]

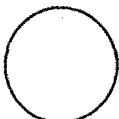
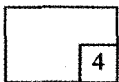
[4 markah]

Answer / Jawapan :

(a)

(b)

23



24 Solve the equation  $\sin 2x - 2 \cos x = \cos 90^\circ$  for  $0^\circ \leq x \leq 360^\circ$ .

*Selesaikan persamaan  $\sin 2x - 2 \cos x = \cos 90^\circ$  bagi  $0^\circ \leq x \leq 360^\circ$ .*

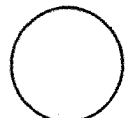
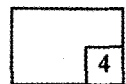
*Answer / Jawapan :*

[4 marks]

[4 markah]

*For  
Examiner's  
Use*

24



For  
Examiner's  
Use

- 25 Diagram 25 shows a standard normal distribution graph.  
Rajah 25 menunjukkan satu graf taburan normal piawai.

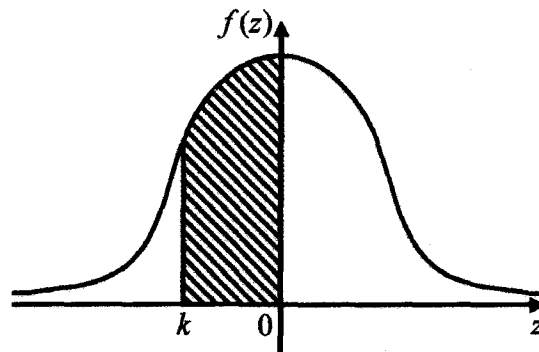


Diagram 25 / Rajah 25

Given that  $P(k \leq z \leq 0) = 0.3944$ , find  
Diberi bahawa  $P(k \leq z \leq 0) = 0.3944$ , cari

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

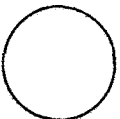
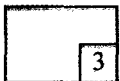
[3 marks]  
[3 markah]

Answer / Jawapan :

(a)

(b)

25



END OF QUESTION PAPER  
KERTAS SOALAN TAMAT

**BLANK PAGE**  
**HALAMAN KOSONG**

**INFORMATION FOR CANDIDATES**  
**MAKLUMAT UNTUK CALON**

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