

SENARAI KUMUS

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.

$$S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, r \neq 1$$
13.

$$S_\infty = \frac{a}{1-r}, |r| < 1$$
14.

$$y = uv, \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$
15.

$$y = \frac{u}{v}, \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$
16.

$$\frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$$
17.

Luas di bawah lengkung  
*Area under a curve*  
$$= \int_a^b y \, dx \text{ atau / or } = \int_a^b x \, dy$$
18.

Isipadu kisaran / *Volume of revolution*  
$$= \int_a^b \pi y^2 dx \text{ atau / or } = \int_a^b \pi x^2 dy$$
19.

$$I = \frac{Q_1}{Q_0} \times 100$$
20.

$$I = \frac{\sum W_i I_i}{\sum W_i}$$
21.

$${}^n P_r = \frac{n!}{(n-r)!}$$
22.

$${}^n C_r = \frac{n!}{(n-r)!r!}$$
23.

$$P(X=r) = {}^n C_r p^r q^{n-r}, p+q=1$$
24.

Min / *mean*,  $\mu = np$
25.

$$\sigma = \sqrt{npq}$$
26.

$$z = \frac{X - \mu}{\sigma}$$
27.

Panjang lengkok,  $s = j\theta$   
*Arc length*,  $s = r\theta$
28.

Luas sektor,  $L = \frac{1}{2} j^2 \theta$  / *Area of sector*,  $L = \frac{1}{2} r^2 \theta$
29.

$$\sin^2 A + \cos^2 A = 1$$
$$\sin^2 A + k \cos^2 A = 1$$
30.

$$\sec^2 A = 1 + \tan^2 A$$
$$\operatorname{sek}^2 A = 1 + \tan^2 A$$
31.

$$\operatorname{cosec}^2 A = 1 + \cot^2 A$$
$$\operatorname{kosek}^2 A = 1 + \cot^2 A$$
32.

$$\sin 2A = 2 \sin A \cos A$$
$$\sin 2A = 2 \sin A \cos A$$

- 33  $\begin{aligned}\cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \\ \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A\end{aligned}$
- 34  $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$
- 35  $\begin{aligned}\sin(A \pm B) &= \sin A \cos B \pm \cos A \sin B \\ \sin(A \pm B) &= \sin A \cos B \pm \cos A \sin B\end{aligned}$
- 36  $\begin{aligned}\cos(A \pm B) &= \cos A \cos B \mp \sin A \sin B \\ \cos(A \pm B) &= \cos A \cos B \mp \sin A \sin B\end{aligned}$
- 37  $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \pm \tan A \tan B}$
- 38  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
- 39  $\begin{aligned}a^2 &= b^2 + c^2 - 2 \cos A \\ a^2 &= b^2 + c^2 - 2 \cos A\end{aligned}$
- 40 Luas segi tiga / *Area of triangle*  
 $= \frac{1}{2} ab \sin C$
- 41 Titik yang membahagi suatu tembereng garis / *A point dividing a segment of a line*  
 $(x, y) = \left( \frac{nx_1 + mx_2}{m + n}, \frac{ny_1 + my_2}{m + n} \right)$
- 42 Luas segi tiga / *Area of triangle*  
 $= \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$
- 43  $|\underline{r}| = \sqrt{x^2 + y^2}$
- 44  $\hat{r} = \frac{x\hat{i} + y\hat{j}}{\sqrt{x^2 + y^2}}$

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**Bahagian A**

[64 markah]

*Jawab semua soalan.*

- 1 (a) Titik – titik  $A(3,2)$ ,  $B(x,y)$  dan  $C(8,7)$  terletak pada suatu garis lurus. Titik  $B$  membahagikan garis lurus  $AC$  dengan nisbah  $4 : 1$ . Cari nilai  $x$  dan  $y$ .

*Points  $A(3,2)$ ,  $B(x,y)$  and  $C(8,7)$  are on a straight line.  $B$  divides the straight line  $AC$  in the ratio  $4 : 1$ . Find the values of  $x$  and  $y$ .*

[2 markah]

[2 marks]

- (b) Titik  $P(x,y)$  bergerak dengan jaraknya dari titik  $S(1,2)$  dan  $T(4,-1)$  ialah  $2 : 1$ . Cari persamaan lokus bagi titik bergerak  $P$ .

*A point moves such that its distances from points  $S(1,2)$  dan  $T(4,-1)$  are in the ratio  $2 : 1$ .*

*Find the equation of the locus of the moving point  $P$ .*

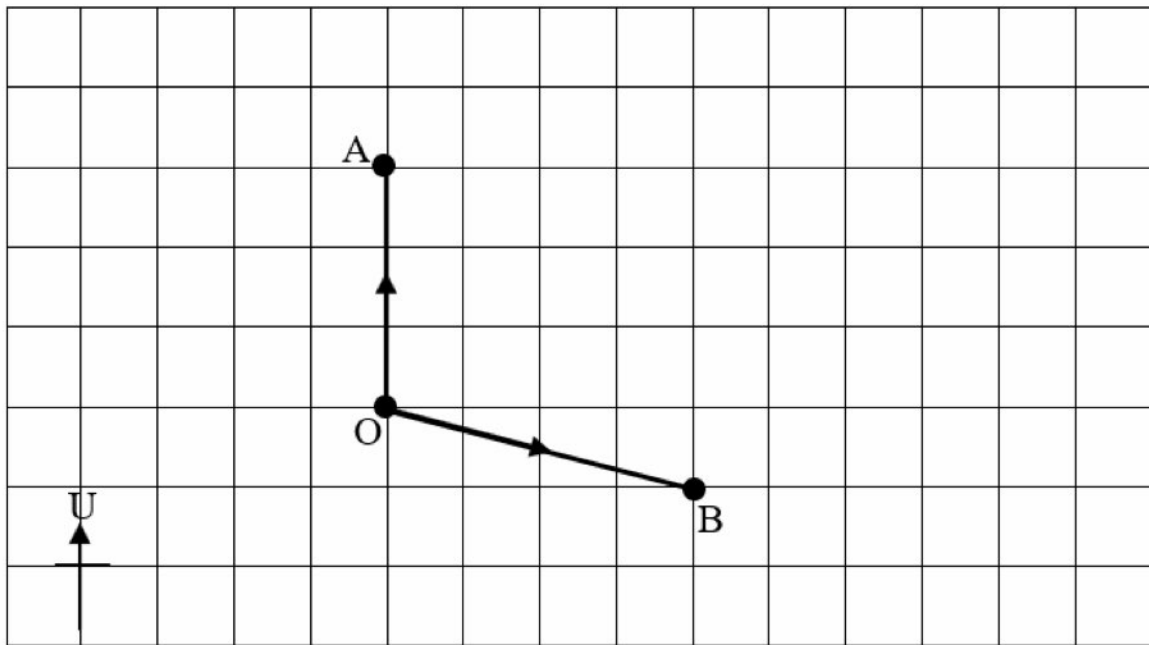
[3 markah]

[3 marks]

Jawapan/ Answer:

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- 2 Rajah 1 menunjukkan  $\overrightarrow{OA}$  dan  $\overrightarrow{OB}$  yang dilukis pada grid segi empat sama bersisi 1 unit.  
Diagram 1 shows  $\overrightarrow{OA}$  and  $\overrightarrow{OB}$  which are drawn on a 1-unit sided square grid.



Rajah 1  
Diagram 1

- (a) Suatu zarah mula bergerak dari titik  $O$  ke titik  $A$  seperti yang ditunjukkan dalam Rajah 1. Nyatakan sama ada pergerakan itu ialah kuantiti vektor atau kuantiti skalar. Berikan justifikasi anda.  
*A particle starts moving from point  $O$  to point  $A$  as shown in Diagram 1. State whether the movement is a vector quantity or a scalar quantity. Justify your answer.*
- [1 markah]  
[1 mark]
- (b) Seterusnya, zarah itu bergerak ke titik  $B$ . Pada Rajah 1, lukis dan nyatakan vektor  $\overrightarrow{AB}$  dalam sebutan  $\underline{i}$  dan  $\underline{j}$ .  
*Next, the particle moves to point  $B$ . On Diagram 1, draw and express the vector  $\overrightarrow{AB}$  in terms of  $\underline{i}$  and  $\underline{j}$ .*
- [2 markah]  
[2 marks]
- (c) Cari magnitud dan arah vektor  $\overrightarrow{AB}$ .  
*Find the magnitude and direction of vector  $\overrightarrow{AB}$ .*

[3 markah]  
[3 marks]

Jawapan / Answer:

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- 3 (a) Diberi bahawa sebutan ke- $n$  bagi suatu jangjang geometri ialah  $T_n = \frac{5}{3}(2)^{1+2n}$ .  
Given that the  $n^{\text{th}}$  term of a geometric progression is  $T_n = \frac{5}{3}(2)^{1+2n}$ .

Cari / find

- (i) sebutan pertama,  
the first term,  
(ii) nilai  $n$  jika  $T_n = \frac{40960}{3}$   
the value of  $n$  if  $T_n = \frac{40960}{3}$

[3 markah]

[3 marks]

- (b) 5.1212121... boleh diungkapkan dalam bentuk pecahan tunggal  $\frac{h}{33}$ . Cari nilai  $h$  dengan menggunakan rumus  $S_\infty$ .  
5.1212121... can be expressed as a single fraction  $\frac{h}{33}$ . Find the value of  $h$  using the formula of  $S_\infty$ .

[2 markah]

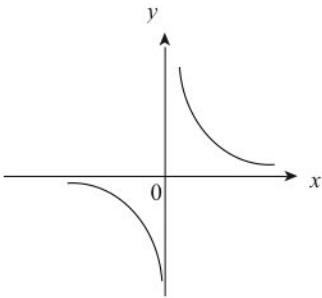
[2 marks]

Jawapan / Answer:

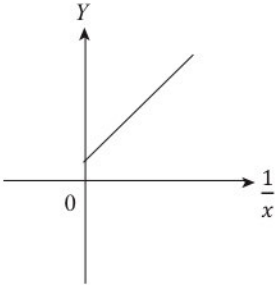
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- 4 Rajah 2.1 menunjukkan sebahagian daripada lengkung bagi  $y = \frac{2}{x^3} + \frac{1}{x^2}$ . Rajah 2.2 menunjukkan graf garis lurus yang diperoleh dengan memplot Y melawan  $\frac{1}{x}$ , apabila  $y = \frac{2}{x^3} + \frac{1}{x^2}$  diungkapkan dalam bentuk linear.

Diagram 2.1 shows part of the curve  $y = \frac{2}{x^3} + \frac{1}{x^2}$ . Diagram 2.2 shows a straight line graph obtained by plotting Y against  $\frac{1}{x}$  when  $y = \frac{2}{x^3} + \frac{1}{x^2}$  is expressed in the linear form.



Rajah 2.1  
Diagram 2.1



Rajah 2.2  
Diagram 2.2

- (a) Cari nilai kecerunan dan pintasan-X bagi garis lurus tersebut.  
*find the value of gradient and the X-intercept for the linear graph.*
- [3 markah]  
[3 marks]
- (b) Seterusnya, lakarkan satu graf linear baru dengan pintasan-Y dari (a) dan paksi- $\frac{1}{x^2}$ .  
*Hence, sketch a new linear graph with the Y-intercept from (a) and  $\frac{1}{x^2}$  axes.*

[1 markah]  
[1 mark]

Jawapan/ Answer:



- 5 (a) Persamaan kuadratik  $2px^2 - 2qx + 6 = 0$ , dengan keadaan  $p$  dan  $q$  ialah pemalar, mempunyai dua punca yang sama. Ungkapkan  $p$  dalam sebutan  $q$ .  
*The quadratic equation  $2px^2 - 2qx + 6 = 0$ , where  $p$  and  $q$  are constants, has two equal roots. Express  $p$  in terms of  $q$ .*
- [2 markah]  
[2 marks]
- (b) Diberi bahawa  $p$  dan  $q$  ialah punca – punca bagi persamaan kuadratik,  $x^2 - 7x + 10 = 0$ . Bentuk satu persamaan kuadratik yang baharu yang mempunyai punca – punca  $p + 2$  dan  $q + 2$ .  
*Given that  $p$  and  $q$  are the roots of the quadratic equation  $x^2 - 7x + 10 = 0$ . Form a new quadratic equation whose roots are  $p + 2$  and  $q + 2$ .*

[4 markah]  
[4 marks]

Jawapan/ Answer:

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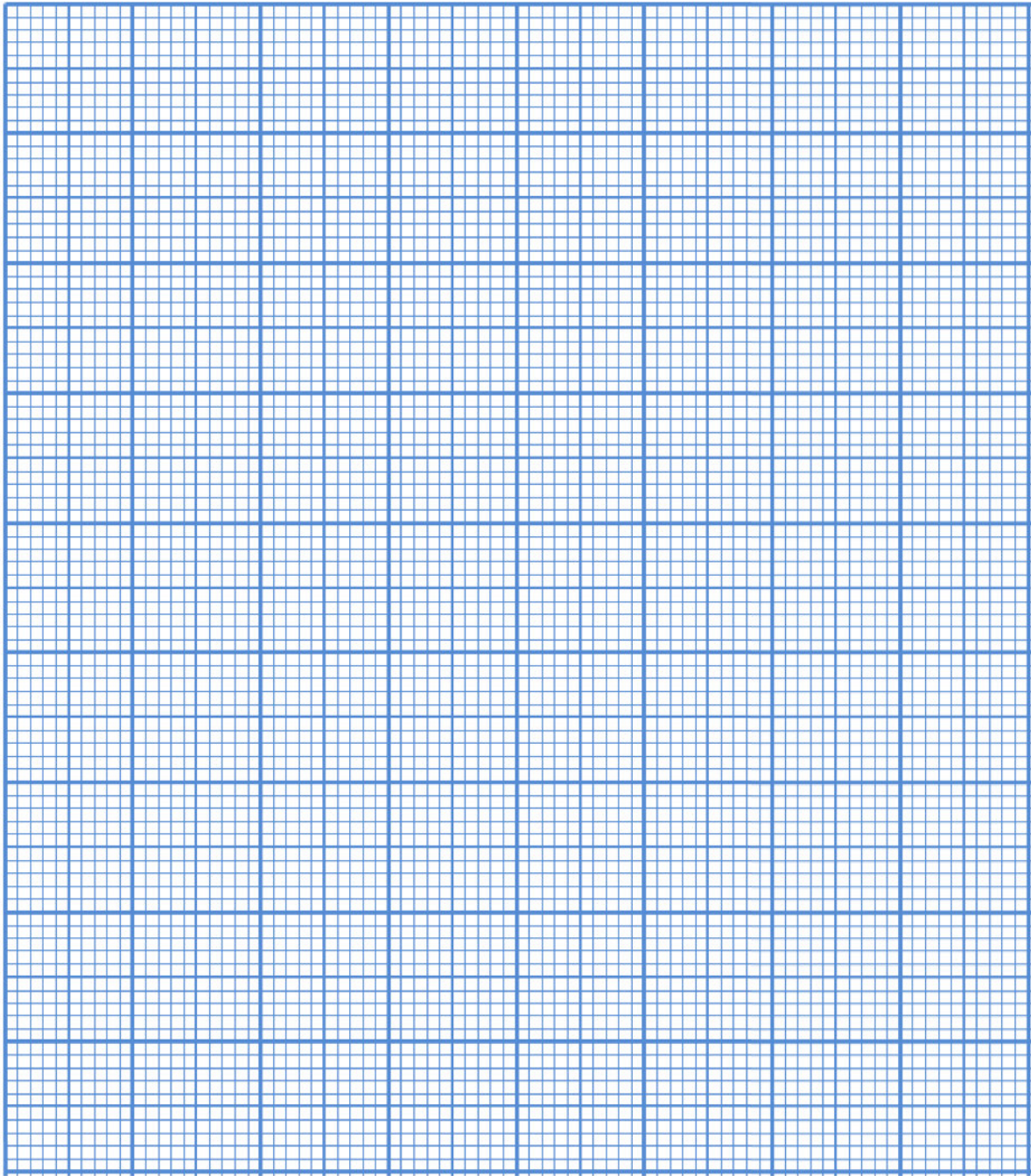
- 6 Lukis graf bagi pasangan persamaan  $4 = x + y$  dan  $x^2 - y = 2$  dengan domain  $-3 \leq x \leq 3$ .  
Seterusnya, tentukan penyelesaian persamaan serentak tersebut.  
*Draw a graph for the pair of equations  $4 = x + y$  and  $x^2 - y = 2$  with the domain  $-3 \leq x \leq 3$ .  
Hence, determine the solutions of the simultaneous equations.*

[6 markah]

[6 marks]

Jawapan/ Answer:

| $x$           | - 3 | - 2 | -1 | 0 | 1 | 2 | 3 |
|---------------|-----|-----|----|---|---|---|---|
| $4 = x + y$   |     |     |    |   |   |   |   |
| $x^2 - y = 2$ |     |     |    |   |   |   |   |

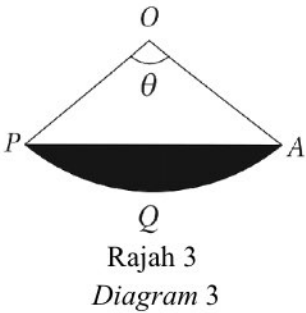


- 7 (a) Panjang lengkok minor  $PQ$  bagi sektor  $POQ$  berpusat  $O$  adalah sama dengan jejaringnya. Lukis dan labelkan sudut yang dicangkum pada pusat  $O$  pada ruangan jawapan.  
*The length of the minor arc  $PQ$  of sector  $POQ$  with center  $O$  is equal to its radius. Draw and label the angle subtended at the center  $O$  in the answer space.*

[1 markah]

[1 mark]

- (b) Rajah 3 menunjukkan sebuah sektor bulatan berpusat  $O$  dan berjejari  $h$ . Diberi nilai  $\theta = 1.8$  radian.  
*Diagram 3 shows a circular sector, centre  $O$  with radius  $h$ . Given that the value of  $\theta = 1.8$  radians.*

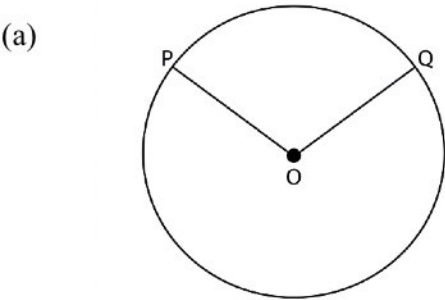


Cari perimeter kawasan berlorek dalam sebutan  $h$ .  
*Find, the perimeter of the shaded region in terms of  $h$ .*

[4 markah]

[4 marks]

Jawapan/ Answer:



- 8 (a) Cari nilai  $\lim_{x \rightarrow 3} \frac{3-x}{x^2-9}$   
Find the value of  $\lim_{x \rightarrow 3} \frac{3-x}{x^2-9}$ .

[2 markah]  
[2 marks]

- (b) Diberi fungsi  $y = 3x^2 + 6x - 4$ , dengan menggunakan Prinsip Pertama, cari nilai  $\frac{dy}{dx}$ .  
Given the function  $y = 3x^2 + 6x - 4$ , using the First Principle, find  $\frac{dy}{dx}$ .

[2 markah]  
[2 marks]

Jawapan/ Answer:

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- 9 Diberi  $\int_0^1 f(x) \, dx = 5$  . Cari nilai

*Given  $\int_0^1 f(x) \, dx = 5$  . Find the value*

$$\int_1^0 [7f(x) - 4x] \, dx$$

[4 markah]

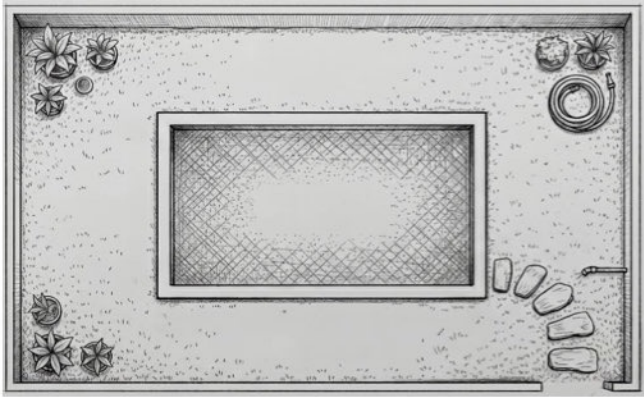
[4 marks]

Jawapan / *Answer*:

- 10 (a) Diberi  $5^{2x} = h$ ,  $5^y = k$  dan  $25^{x-y} = 4 - 25^x$ . Ungkapkan  $h$  dalam sebutan  $k$ .  
*Given  $5^{2x} = h$ ,  $5^y = k$  and  $25^{x-y} = 4 - 25^x$ . Express  $h$  in term of  $k$ .*

[3 markah]  
[3 marks]

- (b) Encik Lee ingin membina sebuah kolam air di kawasan halaman rumahnya seperti yang ditunjukkan dalam Rajah 4(b). Halaman tersebut berbentuk segi empat tepat dan sebahagian daripada kawasannya akan dijadikan kolam. Panjang kolam air yang dirancang adalah kuasa dua lebarnya. Diberi bahawa lebar kolam air yang ingin dibina ialah  $(5 - \sqrt{3})$ .  
*Mr. Lee wants to build a water pond in his yard as shown in Diagram 4(b). The yard is rectangular in shape, and a portion of its area will be converted into a pond. The planned length of the water pond is the square of its width. Given that the width of the water pond to be built is*



Rajah / Diagram 4(b)

Tulis satu ungkapan untuk panjang kolam air tersebut dalam sebutan  $\sqrt{3}$ . Seterusnya, cari luas kawasan yang akan dilitupi oleh kolam air itu.  
*Write an expression for the length of the water pond in terms of  $\sqrt{3}$ . Hence, find the area of the region that will be covered by the water pond.*

[4 markah]  
[4 marks]

Jawapan / Answer:



- 11 (a) Satu kumpulan debat sekolah terdiri daripada 6 orang ahli dengan 2 daripada ahli kumpulan itu ialah lelaki. 2 orang ahli kumpulan debat itu dipilih secara rawak untuk menyertai suatu pertandingan dan  $X$  mewakili bilangan ahli kumpulan lelaki.

*A school debate team consists of 6 members, 2 of whom are male. 2 members of the debate team are randomly selected to participate in a competition, and  $X$  represents the number of male members of the team.*

Tentukan sama ada peristiwa tersebut adalah pemboleh ubah rawak diskret atau pemboleh ubah rawak selanjar. Jelaskan.

*Determine whether the event is a discrete random variable or a continuous random variable. Explain.*

[1 markah]

[1 mark]

- (b) Markah dalam suatu ujian Bahasa Inggeris di sebuah sekolah bertaburan normal dengan min,  $\mu$  dan sisihan piawai,  $\sigma$ . Diberi bahawa 10% daripada murid di sekolah itu mendapat lebih daripada 75 markah dan 25% daripada murid di sekolah itu mendapat kurang daripada 40 markah.

*The scores in an English test in a school are normally distributed with mean,  $\mu$  and a standard deviation,  $\sigma$ . It is given that 10% of the students in the school score more than 75 marks and 25% of the students in the school score less than 40 marks.*

Cari  $\mu$  dan  $\sigma$  bagi markah dalam suatu ujian Bahasa Inggeris.

*Find  $\mu$  and  $\sigma$  of the scores in an English test.*

[5 markah]

[5 marks]

Jawapan / Answer:

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- 12 (a) (i) Tujuh orang ahli jawatankuasa duduk bersama-sama mengelilingi sebuah meja bulat. Cari bilangan cara berlainan mereka boleh duduk.  
*Seven committee members are seated around a circular table. Find the number of different arrangements possible.*  
[2 markah]  
[2 marks]
- (ii) Seterusnya, cari bilangan susunan berbeza yang mungkin bagi semua huruf dalam perkataan **BAHAGIA** jika semua huruf vokal sentiasa bersama.  
*Hence, find the number of different arrangements that can be formed using all the letters in the word **BAHAGIA** if all the vowels are always together.*  
[1 markah]  
[1 mark]
- (b) Sebuah kedai menawarkan 5 jenis kek coklat dan 3 jenis kek keju. Seorang pelanggan ingin memilih 3 jenis kek. Cari bilangan cara memilih sekurang-kurangnya satu kek coklat dan satu kek keju.  
*A bakery offers 5 types of chocolate cakes and 3 types of cheesecakes. A customer wishes to select 3 types of cakes. Find the number of ways to select the cakes if at least one chocolate cake and one cheesecake must be chosen.*  
[3 markah]  
[3 marks]

Jawapan / Answer:

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## Bahagian B

[16 markah]

Jawab **dua** dari tiga soalan.

- 13 Diberi bahawa fungsi  $f(x) = 3x - 6$  dan fungsi gubahan  $gf(x) = \frac{3}{4x-5}, x \neq \frac{5}{4}$ .  
*It is given that the function  $f(x) = 3x - 6$  and the composite function  $gf(x) = \frac{3}{4x-5}, x \neq \frac{5}{4}$*

- (a) Cari  $g(x)$ .  
*Find  $g(x)$ .*

[3 markah]  
[3 marks]

- (b) (i) Lakar graf  $y = |f(x)|$  untuk domain  $-1 \leq x \leq 4$ . Nyatakan julat yang sepadan dengan domain yang diberi.  
*Sketch the graph of  $y = |f(x)|$  for the domain  $-1 \leq x \leq 4$ . State the range that corresponds to the given domain.*

[3 markah]  
[3 marks]

- (ii) Cari domain bagi  $f(x) > 3$ .  
*Find the domain of  $f(x) > 3$ .*

[2 markah]  
[2 marks]

Jawapan / Answer:

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SULIT

- 14 Sebuah helikopter penyelamat  $P$  berlepas dari pusat kawalan  $O$  dengan halaju  $v_P = 6\mathbf{i} + 8\mathbf{j} \text{ km j}^{-1}$ . Pada masa yang sama, sebuah dron perubatan  $Q$  bergerak dari pangkalan satelit  $A$  dengan halaju  $v_Q = 4\mathbf{i} + 5\mathbf{j} \text{ km j}^{-1}$ . Diberi vektor kedudukan pangkalan satelit  $A$  ialah  $\overrightarrow{OA} = 16\mathbf{i} + 24\mathbf{j}$ .  
*A rescue helicopter  $P$  leaves control centre  $O$  with a velocity of  $v_P = 6\mathbf{i} + 8\mathbf{j} \text{ km j}^{-1}$ . At the same time, a medical drone  $Q$  flies from satellite base  $A$  with a velocity of  $v_Q = 4\mathbf{i} + 5\mathbf{j} \text{ km j}^{-1}$ . Given that the position vector of satellite base  $A$  is  $\overrightarrow{OA} = 16\mathbf{i} + 24\mathbf{j}$ .*

- a) Nyatakan sesaran dan vektor kedudukan dron  $Q$  selepas  $t$  jam.  
*State the displacement and the position vector of drone  $Q$  after  $t$  hours.*

[3 markah]

[3 marks]

- b) Hitung masa, dalam jam, apabila helikopter  $P$  dan dron  $Q$  bertemu.  
*Calculate the time, in hours, when helicopter  $P$  and drone  $Q$  meet.*

[2 markah]

[2 marks]

- c) Cari jarak titik pertemuan itu dari pusat kawalan  $O$ .  
*Find the distance of the meeting point from the control centre  $O$ .*

[3 markah]

[3 marks]

Jawapan / Answer:

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SULIT

- 15 Diberi bahawa  $\cos \theta = \frac{12}{13}$  dan  $\theta$  ialah sudut tirus.  
*Given that  $\cos \theta = \frac{12}{13}$  and  $\theta$  is an acute angle.*

(a) Cari nilai tepat bagi  $\sin \theta$ .  
*Find the exact value of  $\sin \theta$ .*

[1 markah]

[1 mark]

(b) Dengan menggunakan rumus sudut berganda, cari nilai tepat bagi  $\sin 2\theta$  dan  $\cos 2\theta$ .  
*Using the double-angle formula, find the exact values of  $\sin 2\theta$  and  $\cos 2\theta$ .*

[4 markah]

[4 marks]

(c) Seterusnya, dengan menggunakan rumus sudut majmuk, hitung nilai tepat bagi  $\cos 3\theta$ .  
*Hence, using the compound-angle formula, find the exact value of  $\cos 3\theta$ .*

[3 markah]

[3 marks]

Jawapan / Answer:

**KERTAS PEPERIKSAAN TAMAT**

**[Lihat halaman sebelah  
SULIT**

KEBARANGKALIAN HUJUNG ATAS  $Q(z)$  BAGI TABURAN NORMAL  $N(0, 1)$   
THE UPPER TAIL PROBABILITY  $Q(z)$  FOR THE NORMAL DISTRIBUTION  $N(0, 1)$

| z   | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 1     | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|---|----|----|----|----|----|----|----|
|     |        |        |        |        |        |        |        |        |        |        | TOLAK |   |    |    |    |    |    |    |    |
| 0.0 | .5000  | .4960  | .4920  | .4880  | .4840  | .4801  | .4761  | .4721  | .4681  | .4641  | 4     | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |
| 0.1 | .4602  | .4562  | .4522  | .4483  | .4443  | .4404  | .4364  | .4325  | .4286  | .4247  | 4     | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 |
| 0.2 | .4207  | .4168  | .4129  | .4090  | .4052  | .4013  | .3974  | .3936  | .3897  | .3859  | 4     | 8 | 12 | 15 | 19 | 23 | 27 | 31 | 35 |
| 0.3 | .3821  | .3783  | .3745  | .3707  | .3669  | .3632  | .3594  | .3557  | .3520  | .3483  | 4     | 7 | 11 | 15 | 19 | 22 | 26 | 30 | 34 |
| 0.4 | .3446  | .3409  | .3372  | .3336  | .3300  | .3264  | .3228  | .3192  | .3156  | .3121  | 4     | 7 | 11 | 14 | 18 | 22 | 25 | 29 | 32 |
| 0.5 | .3085  | .3050  | .3015  | .2981  | .2946  | .2912  | .2877  | .2843  | .2810  | .2776  | 3     | 7 | 10 | 14 | 17 | 20 | 24 | 27 | 31 |
| 0.6 | .2743  | .2709  | .2676  | .2643  | .2611  | .2578  | .2546  | .2514  | .2483  | .2451  | 3     | 7 | 10 | 13 | 16 | 19 | 23 | 26 | 29 |
| 0.7 | .2420  | .2389  | .2358  | .2327  | .2296  | .2266  | .2236  | .2206  | .2177  | .2148  | 3     | 6 | 9  | 12 | 15 | 18 | 21 | 24 | 27 |
| 0.8 | .2119  | .2090  | .2061  | .2033  | .2005  | .1977  | .1949  | .1922  | .1894  | .1867  | 3     | 5 | 8  | 11 | 14 | 16 | 19 | 22 | 25 |
| 0.9 | .1841  | .1814  | .1788  | .1762  | .1736  | .1711  | .1685  | .1660  | .1635  | .1611  | 3     | 5 | 8  | 10 | 13 | 15 | 18 | 20 | 23 |
| 1.0 | .1587  | .1562  | .1539  | .1515  | .1492  | .1469  | .1446  | .1423  | .1401  | .1379  | 2     | 5 | 7  | 9  | 12 | 14 | 16 | 19 | 21 |
| 1.1 | .1357  | .1335  | .1314  | .1292  | .1271  | .1251  | .1230  | .1210  | .1190  | .1170  | 2     | 4 | 6  | 8  | 10 | 12 | 14 | 16 | 18 |
| 1.2 | .1151  | .1131  | .1112  | .1093  | .1075  | .1056  | .1038  | .1020  | .1003  | .0985  | 2     | 4 | 6  | 7  | 9  | 11 | 13 | 15 | 17 |
| 1.3 | .0968  | .0951  | .0934  | .0918  | .0901  | .0885  | .0869  | .0853  | .0838  | .0823  | 2     | 3 | 5  | 6  | 8  | 10 | 11 | 13 | 14 |
| 1.4 | .0808  | .0793  | .0778  | .0764  | .0749  | .0735  | .0721  | .0708  | .0694  | .0681  | 1     | 3 | 4  | 6  | 7  | 8  | 10 | 11 | 13 |
| 1.5 | .0668  | .0655  | .0643  | .0630  | .0618  | .0606  | .0594  | .0582  | .0571  | .0559  | 1     | 2 | 4  | 5  | 6  | 7  | 8  | 10 | 11 |
| 1.6 | .0548  | .0537  | .0526  | .0516  | .0505  | .0495  | .0485  | .0475  | .0465  | .0455  | 1     | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 1.7 | .0446  | .0436  | .0427  | .0418  | .0409  | .0401  | .0392  | .0384  | .0375  | .0367  | 1     | 2 | 3  | 4  | 4  | 5  | 6  | 7  | 8  |
| 1.8 | .0359  | .0351  | .0344  | .0336  | .0329  | .0322  | .0314  | .0307  | .0301  | .0294  | 1     | 1 | 2  | 3  | 4  | 4  | 5  | 6  | 6  |
| 1.9 | .0287  | .0281  | .0274  | .0268  | .0262  | .0256  | .0250  | .0244  | .0239  | .0233  | 1     | 1 | 2  | 2  | 3  | 4  | 4  | 5  | 5  |
| 2.0 | .0228  | .0222  | .0217  | .0212  | .0207  | .0202  | .0197  | .0192  | .0188  | .0183  | 0     | 1 | 1  | 2  | 2  | 3  | 3  | 4  | 4  |
| 2.1 | .0179  | .0174  | .0170  | .0166  | .0162  | .0158  | .0154  | .0150  | .0146  | .0143  | 0     | 1 | 1  | 2  | 2  | 2  | 3  | 3  | 4  |
| 2.2 | .0139  | .0136  | .0132  | .0129  | .0125  | .0122  | .0119  | .0116  | .0113  | .0110  | 0     | 1 | 1  | 1  | 2  | 2  | 2  | 3  | 3  |
| 2.3 | .0107  | .0104  | .0102  |        |        |        |        |        |        |        | 0     | 1 | 1  | 1  | 1  | 2  | 2  | 2  | 2  |
|     |        |        | .02990 | .02964 | .02939 | .02914 |        |        |        |        | 3     | 5 | 8  | 10 | 13 | 15 | 18 | 20 | 23 |
| 2.4 | .02820 | .02798 | .02776 | .02755 | .02734 |        |        | .02889 | .02866 | .02842 | 2     | 5 | 7  | 9  | 12 | 14 | 16 | 18 | 21 |
|     |        |        |        |        | .02714 | .02695 |        | .02676 | .02657 | .02639 | 2     | 4 | 6  | 8  | 11 | 13 | 15 | 17 | 19 |
| 2.5 | .02621 | .02604 | .02587 | .02570 | .02554 | .02539 | .02523 | .02508 | .02494 | .02480 | 2     | 3 | 5  | 6  | 8  | 9  | 11 | 12 | 14 |
| 2.6 | .02466 | .02453 | .02440 | .02427 | .02415 | .02402 | .02391 | .02379 | .02368 | .02357 | 1     | 2 | 3  | 5  | 6  | 7  | 8  | 9  | 10 |
| 2.7 | .02347 | .02336 | .02326 | .02317 | .02307 | .02298 | .02289 | .02280 | .02272 | .02264 | 1     | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 2.8 | .02256 | .02248 | .02240 | .02233 | .02226 | .02219 | .02212 | .02205 | .02199 | .02193 | 1     | 1 | 2  | 3  | 4  | 4  | 5  | 6  | 6  |
| 2.9 | .02187 | .02181 | .02175 | .02169 | .02164 | .02159 | .02154 | .02149 | .02144 | .02139 | 0     | 1 | 1  | 2  | 2  | 3  | 3  | 4  | 4  |
| 3.0 | .02135 | .02131 | .02126 | .02122 | .02118 | .02114 | .02111 | .02107 | .02104 | .02100 | 0     | 1 | 1  | 2  | 2  | 2  | 3  | 3  | 4  |

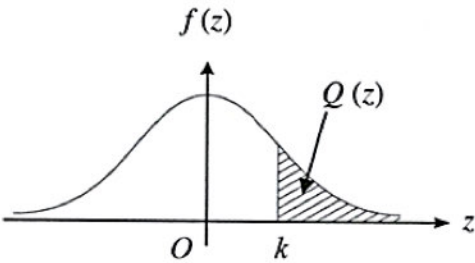
Bagi  $z$  negatif guna hubungan:

For negative  $z$  use relation:

$Q(z) = 1 - Q(-z) = P(-z)$

$f(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2}z^2\right)$

$Q(z) = \int_k^{\infty} f(z) dz$



Contoh / Example:

Jika  $X \sim N(0, 1)$ , maka

If  $X \sim N(0, 1)$ , then

$P(X > k) = Q(k)$

$P(X > 2.1) = Q(2.1) = 0.0179$