



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.*

**SENARAI RUMUS  
LIST OF FORMULAE**

- |  |   |
|--|---|
| <p>1 <math>x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}</math></p> <p>2 <math>\log_a b = \frac{\log_c b}{\log_c a}</math></p> <p>3 <math>T_n = a + (n-1)d</math></p> <p>4 <math>T_n = ar^{n-1}</math></p> <p>5 <math>S_n = \frac{n}{2} [2a + (n-1)d]</math></p> <p>6 <math>S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, r \neq 1</math></p> <p>7 <math>Z = \frac{X - \mu}{\sigma}</math></p> <p>8 <math>P(X=r) = {}^n C_r p^r q^{n-r}, p + q = 1</math></p> <p>9 <math>{}^n P_r = \frac{n!}{(n-r)!}</math></p> <p>10 <math>{}^n C_r = \frac{n!}{(n-r)! r!}</math></p> <p>11 <math>I = \frac{Q_1}{Q_0} \times 100</math></p> <p>12 <math>\bar{I} = \frac{\sum W_i I_i}{\sum W_i}</math></p> <p>13 <math>\sin^2 \theta + \cos^2 \theta = 1</math><br/><math>\sin^2 \theta + \cos^2 \theta = 1</math></p> <p>14 <math>\operatorname{sek}^2 A = 1 + \tan^2 A</math><br/><math>\operatorname{sec}^2 A = 1 + \tan^2 A</math></p> | <p>15 <math>\operatorname{kosek}^2 A = 1 + \operatorname{kot}^2 A</math><br/><math>\operatorname{cosec}^2 A = 1 + \operatorname{cot}^2 A</math></p> <p>16 <math>\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B</math><br/><math>\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B</math></p> <p>17 <math>\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B</math><br/><math>\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B</math></p> <p>18 <math>\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}</math></p> <p>19 <math>\sin 2A = 2 \sin A \cos A</math><br/><math>\sin 2A = 2 \sin A \cos A</math></p> <p>20 <math>\cos 2A = \cos^2 A - \sin^2 A</math><br/><math>= 2 \cos^2 A - 1</math><br/><math>= 1 - 2 \sin^2 A</math><br/><br/><math>\cos 2A = \cos^2 A - \sin^2 A</math><br/><math>= 2 \cos^2 A - 1</math><br/><math>= 1 - 2 \sin^2 A</math></p> <p>21 <math>\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}</math></p> <p>22 <math>\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}</math></p> <p>23 <math>a^2 = b^2 + c^2 - 2bc \cos A</math><br/><math>a^2 = b^2 + c^2 - 2bc \cos A</math></p> <p>24 Luas segi tiga / Area of triangle<br/><math>= \frac{1}{2} ab \sin C</math></p> |
|--|---|

**Bahagian A**  
**Section A**

[64 markah]

[64 marks]

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

1 Diberi  $g(x) = \frac{2x-5}{3x-p}$ ,  $x \neq q$ .

*Given*  $g(x) = \frac{2x-5}{3x-p}$ ,  $x \neq q$ .

(a) (i) Ungkapkan  $p$  dalam sebutan  $q$  dan cari  $g^{-1}(x)$  dalam sebutan  $p$ .  
*Express  $p$  in terms of  $q$  and find  $g^{-1}(x)$  in term of  $p$ .*(ii) Diberi  $g^{n-1}(x) = \frac{px-5}{3x-2}$ ,  $x \neq k$ , tentukan nilai  $n$  dengan membandingkan  $g^{-1}(x)$  di atas dengan  $g^{n-1}(x)$  yang diberikan.  
Seterusnya, cari nilai  $k$ .*Given*  $g^{n-1}(x) = \frac{px-5}{3x-2}$ ,  $x \neq k$ , *determine the value of  $n$  by comparing the  $g^{-1}(x)$  above with the given  $g^{n-1}(x)$ .**Next, find the value of  $k$ .*

[5 markah]

[5 marks]

(b) Apakah syarat ke atas  $p$  supaya  $g = g^{-1}$ ?*What is the condition on  $p$  so that  $g = g^{-1}$ ?*

[1 markah]

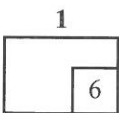
[1 mark]

Jawapan / Answer :

(a) (i)

(ii)

(b)



- 2 Cari julat nilai  $x$  bagi  $5 < 2x^2 + x + 4$  dan  $2x^2 + x + 4 \leq 10$ .

Seterusnya, selesaikan ketaksamaan  $5 < 2x^2 + x + 4 \leq 10$ .

*Find the range of values of  $x$  for  $5 < 2x^2 + x + 4$  and  $2x^2 + x + 4 \leq 10$ .*

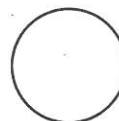
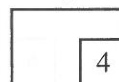
*Hence, solve the inequality  $5 < 2x^2 + x + 4 \leq 10$ .*

[4 markah]

[4 marks]

Jawapan / Answer :

2



- 3 (a) Cari nilai  $p$  dan  $q$  bagi persamaan  $(\sqrt{2} - 1)(p + q\sqrt{2}) = 5 - \sqrt{8}$ .

*Find the value of  $p$  and  $q$  for the equation  $(\sqrt{2} - 1)(p + q\sqrt{2}) = 5 - \sqrt{8}$ .*

[3 markah]

[3 marks]

- (b) Cari nilai  $p$  yang memuaskan persamaan berikut:

*Find the value of  $p$  which satisfies the following equation:*

$$\frac{3}{\log_p pq} + \frac{3}{\log_q pq} + 2 = 5p$$

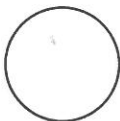
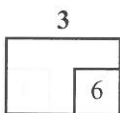
[3 markah]

[3 marks]

Jawapan / Answer :

(a)

(b)



- 4 (a) Tentukan sama ada persamaan berikut ialah sistem persamaan linear dalam tiga pemboleh ubah atau bukan.

Terangkan.

*Determine whether the following equations are system of linear equations in three variables or not.*

*Explain.*

$$\begin{aligned} 2x + y &= z^2 \\ 4x - 2y + 3z &= 6 \\ 11y + 5x - z &= 3 \end{aligned}$$

[1 markah]

[1 mark]

- (b) Selesaikan sistem persamaan linear berikut dan jelaskan hasil dapatan.

*Solve the following system of linear equations and explain the result of the findings.*

$$\begin{aligned} y - 7z &= -2 \\ x - y + 5z &= 2 \\ -2x + 2y - 10z &= 6 \end{aligned}$$

[4 markah]

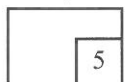
[4 marks]

Jawapan / Answer :

(a)

(b)

4



- 5 (a) Diberi suatu jangjang geometri dengan sebutan-sebutan  $a, ar, ar^2, ar^3, \dots, ar^{n-2}, ar^{n-1}$  dan hasil tambah  $n$  sebutan pertama ialah  $S_n$ .  
Terbitkan rumus hasil tambah  $n$  sebutan pertama,  $S_n$  bagi jangjang geometri apabila  $|r| < 1$ .

*Given a geometric progression with terms  $a, ar, ar^2, ar^3, \dots, ar^{n-2}, ar^{n-1}$  and the sum of first  $n$  terms is  $S_n$ .*

*Derive the formula for the sum of the first  $n$  terms,  $S_n$  for the geometric progression when  $|r| < 1$ .*

[3 markah]

[3 marks]

- (b) Seterusnya, cari nilai bagi  $n$  dengan keadaan hasil tambah  $2n$  sebutan pertama adalah  $\frac{127}{128}$  kali hasil tambah  $n$  sebutan pertama bagi suatu jangjang geometri yang mempunyai nisbah sepunya  $-\frac{1}{2}$ .

*Hence, find the value of  $n$  for which the sum of the first  $2n$  terms is  $\frac{127}{128}$  times of the sum of first  $n$  terms of a geometric progression which has a common ratio of  $-\frac{1}{2}$ .*

[4 markah]

[4 marks]

Jawapan / Answer :

(a)

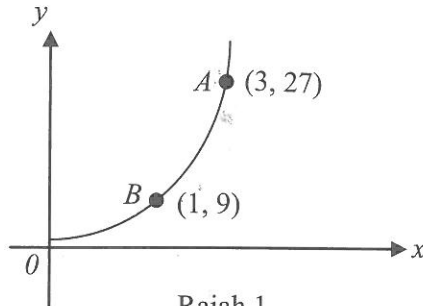






- 6 Rajah 1 menunjukkan sebahagian daripada graf  $y$  melawan  $x$  bagi persamaan  $y = pq^x$ , dengan keadaan  $p$  dan  $q$  ialah pemalar.

Diagram 1 shows part of the graph of  $y$  against  $x$  for the equation  $y = pq^x$ , such that  $p$  and  $q$  are constants.



Rajah 1  
Diagram 1

- (a) Lakarkan graf garis lurus  $\log_3 y$  melawan  $x$ . Seterusnya, tanda dan nyatakan koordinat bagi titik-titik yang sepadan dengan  $A$  dan  $B$ .

Sketch the straight line graph of  $\log_3 y$  against  $x$ . Hence, mark and state the coordinates of the corresponding point  $A$  and  $B$ .

[2 markah]

[2 marks]

- (b) Hitung nilai  $p$  dan  $q$ .

Calculate the value of  $p$  and  $q$ .

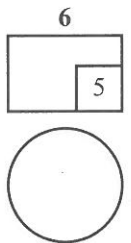
[3 markah]

[3 marks]

Jawapan / Answer :

- (a)

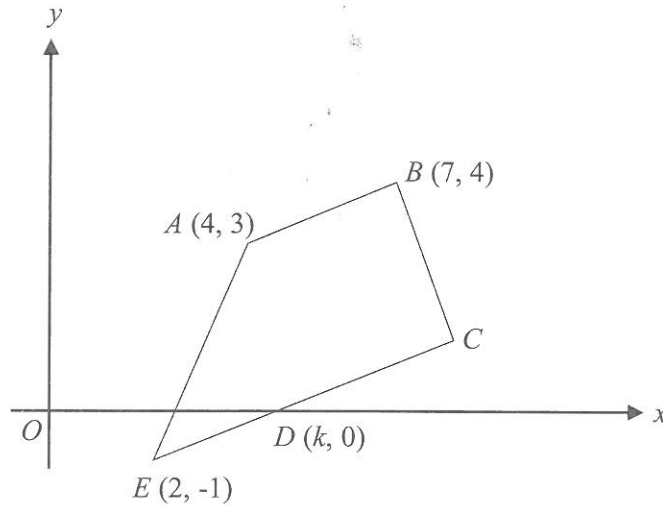
(b)



- 7 Penyelesaian secara lukisan berskala tidak diterima.  
*Solutions by scale drawing is not accepted.*

Rajah 2 menunjukkan sebuah trapezium  $ABCDE$  dengan keadaan  $BC$  ialah tinggi bagi trapezium  $ABCDE$ .

*Diagram 2 shows a trapezium  $ABCDE$  where  $BC$  is the height of the trapezium  $ABCDE$ .*



Rajah 2  
Diagram 2

Cari  
Find

- (a) nilai  $k$ ,  
*the value of  $k$ ,*
- (b) koordinat bagi titik  $C$ .  
*the coordinates of point  $C$ .*

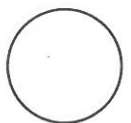
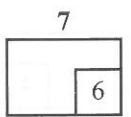
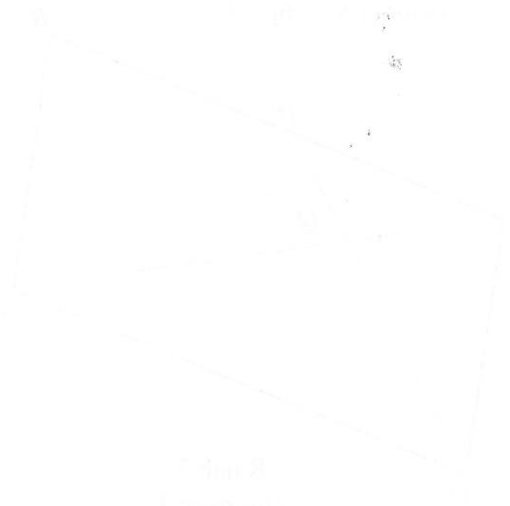
[2 markah]  
[2 marks]

[4 markah]  
[4 marks]

Jawapan / Answer :

- (a)

(b)

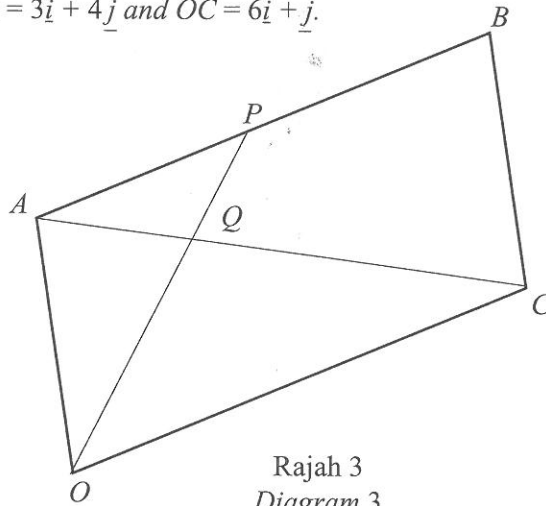


- 8 Rajah 3 menunjukkan sebuah segi empat selari  $OABC$ . Titik  $P$  ialah titik tengah  $AB$  dan nisbah  $\overrightarrow{QP} : \overrightarrow{OP} = 2 : 5$ .

Diberi bahawa  $\overrightarrow{OA} = 3\mathbf{i} + 4\mathbf{j}$  dan  $\overrightarrow{OC} = 6\mathbf{i} + \mathbf{j}$ .

Diagram 3 shows a parallelogram  $OABC$ . Point  $P$  is the midpoint of  $AB$  and the ratio of  $\overrightarrow{QP} : \overrightarrow{OP} = 2 : 5$ .

Given that  $\overrightarrow{OA} = 3\mathbf{i} + 4\mathbf{j}$  and  $\overrightarrow{OC} = 6\mathbf{i} + \mathbf{j}$ .



Rajah 3  
Diagram 3

Ungkapkan dalam sebutan  $\mathbf{i}$  dan  $\mathbf{j}$ ,  
Express in the terms of  $\mathbf{i}$  and  $\mathbf{j}$ ,

(a)  $\overrightarrow{OP}$

[1 markah]

(b)  $\overrightarrow{AQ}$

[1 mark]

Jawapan / Answer :

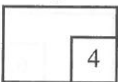
[3 markah]

[3 marks]

(a)

(b)

8

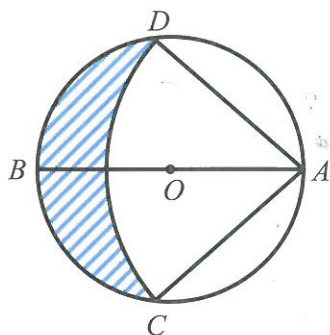


4



- 9 Rajah 4 menunjukkan sebuah bulatan  $ADBC$  berpusat di  $O$  dengan diameter 12 cm manakala sektor  $ADC$  berpusat di  $A$  dengan jejari  $AD = 10$  cm.

*Diagram 4 shows a circle  $ADBC$ , with centre  $O$  and diameter 12 cm while sector  $ADC$  with the centre  $A$  and radius  $AD = 10$  cm.*



Rajah 4  
Diagram 4

Dengan menggunakan  $\pi = 3.142$ ,

*By using  $\pi = 3.142$ ,*

cari

*find*

- (a)  $\angle BAC$  dalam radian,  
 $\angle BAC$  in radians,

[2 markah]  
[2 marks]

- (b) luas, dalam  $\text{cm}^2$ , bagi kawasan berlorek.  
*area, in  $\text{cm}^2$ , of the shaded region.*

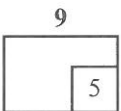
[3 markah]  
[3 marks]

Jawapan / Answer :

(a)



(b)





- 10 (a) Diberi kecerunan tangen kepada lengkung  $y = x^2 (3 + px)$  ialah  $-3$  apabila  $x = -1$ .

Cari nilai  $p$ .

*Given the gradient of the tangent to the curve  $y = x^2 (3 + px)$  is  $-3$  when  $x = -1$ .*

*Find the value of  $p$ .*

[2 markah]

[2 marks]

- (b) Isi padu,  $V \text{ cm}^3$ , bagi sebuah pepejal diberi oleh  $V = 8\pi r^2 + \frac{2}{3} \pi r^3$ ,  $r$  ialah jejari.

Cari perubahan hampir bagi  $V$ , dalam sebutan  $\pi$ , jika  $r$  bertambah daripada 3 cm kepada 3.005 cm.

*Volume,  $V \text{ cm}^3$ , of a solid is given by  $V = 8\pi r^2 + \frac{2}{3} \pi r^3$ ,  $r$  is the radius. Find the approximate change in  $V$ , in terms of  $\pi$ , if  $r$  increases from 3 cm to 3.005 cm.*

[3 markah]

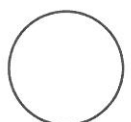
[3 marks]

Jawapan / Answer :

(a)

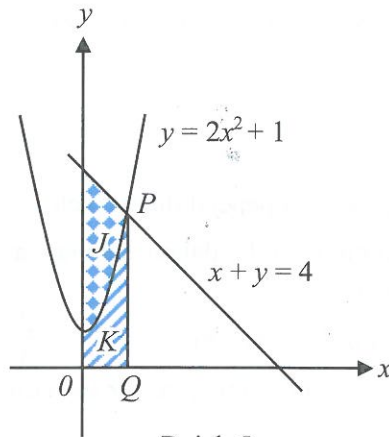
(b)

10



- 11 Rajah 5 menunjukkan lengkung  $y = 2x^2 + 1$  dan garis lurus  $x + y = 4$  yang bersilang pada titik  $P$ .

Diagram 5 shows the curve  $y = 2x^2 + 1$  and a straight line  $x + y = 4$  intersect at point  $P$ .



Rajah 5  
Diagram 5

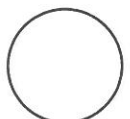
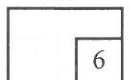
Cari  
Find

- (a) luas rantau berlorek  $J$ ,  
the area of the shaded region  $J$ ,  
[3 markah]  
[3 marks]
- (b) isi padu janaan, dalam sebutan  $\pi$ , apabila rantau  $K$  yang dibatasi oleh lengkung  $y = 2x^2 + 1$ , garis lurus  $PQ$ , paksi- $x$  dan paksi- $y$ , dikisarkan  $360^\circ$  pada paksi- $x$ .  
the volume generated, in term of  $\pi$ , when the region  $K$  which bounded by the curve  $y = 2x^2 + 1$ , the straight line  $PQ$ ,  $x$ -axis and  $y$ -axis is revolved through  $360^\circ$  about the  $x$ -axis.  
[3 markah]  
[3 marks]

Jawapan / Answer :

(a)

(b)



- 12 (a) Cari bilangan cara untuk menyusun setiap perkataan SAKU dan SAKA jika tiada pengulangan huruf dibenarkan. Adakah bilangan cara susunan yang dibentuk adalah sama?

Jelaskan.

*Find the number of ways to arrange each word SAKU and SAKA if no repetition is allowed. Are the number of arrangement that formed are the same?*

*Explain.*

[3 markah]

[3 marks]

- (b) Dua bot digunakan untuk menyeberangi sebatang sungai dengan setiap bot hanya boleh memuatkan 7 orang penumpang. Terdapat 9 orang penumpang dewasa dan 4 orang kanak-kanak.

Jika bilangan kanak-kanak adalah sama dalam kedua-dua bot, cari bilangan cara di mana 13 orang itu dapat dibawa oleh dua bot tersebut.

*Two boats are used to cross a river with each boat only able to carry 7 passengers. There are 9 adults and 4 children passengers.*

*If the number of children are the same on both boats, find the number of ways that these 13 passengers can be carried by the two boats.*

[2 markah]

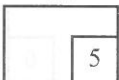
[2 marks]

Jawapan / Answer :

(a)

(b)

12



**Bahagian B**  
**Section B**

[16 markah]

[16 marks]

Jawab mana-mana **dua** soalan daripada bahagian ini.*Answer any two questions from this section.*

- 13 (a) Kebarangkalian Jessy akan menang dalam satu perlawanan badminton ialah  $\frac{1}{3}$ . Jika dia mengambil bahagian dalam  $n$  perlawanan, kebarangkalian bagi Jessy menang sekali dalam perlawanan badminton itu adalah 18 kali kebarangkalian kalah dalam semua perlawanan.

*The probability that Jessy will win in a badminton competition is  $\frac{1}{3}$ . If she participates in  $n$  competitions, the probability for Jessy to win once in the badminton competition is 18 times the probability of losing in all of the competitions.*

- (i) Cari nilai  $n$ .

*Find the value of  $n$ .*

- (ii) Hitung min bagi bilangan kemenangan.

*Calculate the mean for the number of wins.*

[4 markah]

[4 marks]

- (b) Diberi  $Z$  ialah satu pemboleh ubah rawak selanjar dalam satu taburan normal piawai.

*Given that  $Z$  is a continuous random variable in a standard normal distribution.*

Cari,

*Find,*

- (i)  $P(|Z| > 2.053)$

- (ii)  $P(|Z| \leq 1.351)$

[4 markah]

[4 marks]

Jawapan / Answer :

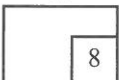
(a) (i)

(ii)

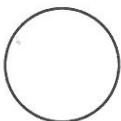
(b) (i)

(ii)

13



8



- 14 (a) Selesaikan persamaan  $3 \sin 2x = 4 \cos x$  untuk  $0^\circ \leq x \leq 360^\circ$ .

*Solve the equation  $3 \sin 2x = 4 \cos x$  for  $0^\circ \leq x \leq 360^\circ$ .*

[4 markah]

[4 marks]

- (b) Selesaikan persamaan serentak  $2 \cos (x - y) = \sqrt{3}$  dan  $2 \cos (x + y) = 1$ , dengan keadaan kedua-dua  $x$  dan  $y$  ialah sudut tirus.

*Solve the simultaneous equations  $2 \cos (x - y) = \sqrt{3}$  and  $2 \cos (x + y) = 1$ , where  $x$  and  $y$  are both acute angles.*

[4 markah]

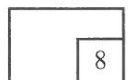
[4 marks]

Jawapan / Answer :

(a)

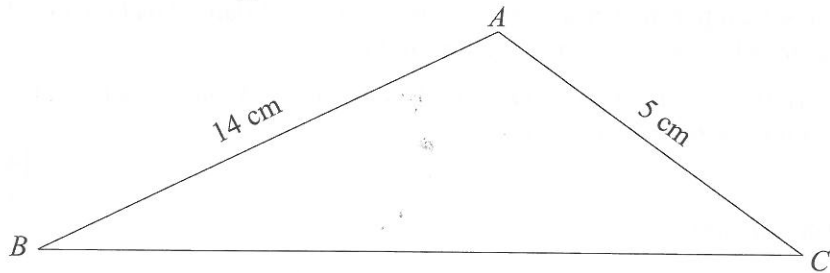
(b)

14



- 15 Rajah 6 menunjukkan sebuah segi tiga  $ABC$ . Diberi luas segi tiga  $ABC$  ialah  $21 \text{ cm}^2$  dan  $\angle BAC$  adalah sudut cakah.

*Diagram 6 shows a triangle  $ABC$ . Given that the area of triangle  $ABC$  is  $21 \text{ cm}^2$  and  $\angle BAC$  is obtuse angle.*



Rajah 6  
Diagram 6

Cari

Find

- (a)  $\angle BAC$ ,

[3 markah]  
[3 marks]

- (b) panjang  $BC$ , dalam cm,  
*the length of  $BC$ , in cm,*

[2 markah]  
[2 marks]

- (c) panjang garis seranjang dari  $A$  ke  $BC$ .  
*the length of the perpendicular line from  $A$  to  $BC$ .*

[3 markah]  
[3 marks]



Jawapan / Answer :

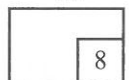
(a)

(b)

(c)

**KERTAS PEPERIKSAAN TAMAT**  
**END OF QUESTION PAPER**

15



**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										Minus / Tolak									
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859	4	8	12	15	19	23	27	31	35
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483	4	7	11	15	19	22	26	30	34
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121	4	7	11	15	18	22	25	29	32
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776	3	7	10	14	17	20	24	27	31
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451	3	7	10	13	16	19	23	26	29
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148	3	6	9	12	15	18	21	24	27
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867	3	5	8	11	14	16	19	22	25
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611	3	5	8	10	13	15	18	20	23
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379	2	5	7	9	12	14	16	19	21
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170	2	4	6	8	10	12	14	16	18
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985	2	4	6	7	9	11	13	15	17
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823	2	3	5	6	8	10	11	13	14
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681	1	3	4	6	7	8	10	11	13
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559	1	2	4	5	6	7	8	10	11
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455	1	2	3	4	5	6	7	8	9
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367	1	2	3	4	4	5	6	7	8
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294	1	1	2	3	4	4	5	6	6
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233	1	1	2	2	3	4	4	5	5
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183	0	1	1	2	2	3	3	4	4
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143	0	1	1	2	2	2	3	3	4
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110	0	1	1	1	2	2	2	3	3
2.3	0.0107	0.0104	0.0102								0	1	1	1	1	2	2	2	2
			0.00990		0.00964	0.00939	0.00914				3	5	8	10	13	15	18	20	23
								0.00889	0.00866	0.00842	2	5	7	9	12	14	16	16	21
2.4	0.00820	0.00798	0.00776	0.00755	0.00734						2	4	6	8	11	13	15	17	19
						0.00714	0.00695	0.00676	0.00657	0.00639	2	4	6	7	9	11	13	15	17
2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480	2	3	5	6	8	9	11	12	14
2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357	1	2	3	5	6	7	9	9	10
2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264	1	2	3	4	5	6	7	8	9
2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193	1	1	2	3	4	4	5	6	6
2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139	0	1	1	2	2	3	3	4	4
3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100	0	1	1	2	2	2	3	3	4

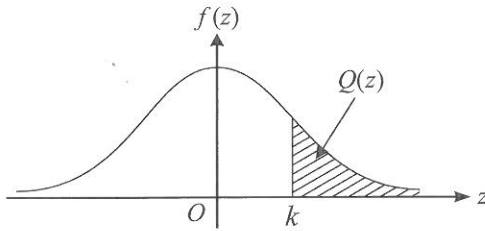
Bagi z negatif guna hubungan:

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

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

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

**HALAMAN KOSONG**  
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**MAKLUMAT UNTUK CALON  
INFORMATION FOR CANDIDATES**

1. Kertas peperiksaan ini mengandungi dua bahagian: **Bahagian A** dan **Bahagian B**.  
*This question paper consists of two section: **Section A** and **Section B**.*
2. Jawab **semua** soalan dalam **Bahagian A** dan mana-mana **dua** soalan daripada **Bahagian B**.  
*Answer **all** questions in **Section A** and any **two** questions from **Section B**.*
3. Tulis jawapan anda dalam ruang yang disediakan dalam kertas peperiksaan.  
*Write your answers in the spaces provided in the question paper.*
4. Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini 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 baharu.  
*If you wish to change your answer, cross out the answer 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. Jadual Kebarangkalian Hujung Atas  $Q(z)$  Bagi Taburan Normal  $N(0, 1)$  disediakan di halaman **26**.  
*The Upper Tail Probability  $Q(z)$  For The Normal Distribution  $N(0, 1)$  Table is provided on page **26**.*
10. Anda dibenarkan menggunakan kalkulator saintifik.  
*You may use a scientific calculator.*
11. Serahkan kertas peperiksaan ini kepada pengawas peperiksaan di akhir peperiksaan.  
*Hand in this question paper to the invigilator at the end of the examination.*