

SULIT

NAMA

TINGKATAN

**PROGRAM GEMPUR KECEMERLANGAN SPM
NEGERI PERLIS**

**ANJURAN BERSAMA
MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI PERLIS
DAN
MAJLIS GURU CEMERLANG NEGERI PERLIS**

**GEMPUR KECEMERLANGAN 2023
MATEMATIK TAMBAHAN**

3472/1

Kertas 1

Oktober

2 jam

Dua jam

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

1. *Tulis nama dan tingkatan anda pada petak yang disediakan.*
2. *Kertas peperiksaan 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 bahasa Inggeris.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas peperiksaan ini.*

Untuk Kegunaan Pemeriksa				
Bahagian	Soalan	Soalan Dijawab	Markah Penuh	
A	1		4	
	2		5	
	3		6	
	4		6	
	5		6	
	6		4	
	7		6	
	8		4	
	9		5	
	10		6	
	11		7	
	12		5	
B	13		8	
	14		8	
	15		8	
Jumlah				

Kertas peperiksaan ini mengandungi 22 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.

SENARAI RUMUS
LIST OF FORMULAE

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

$$2 \quad \log_a b = \frac{\log_c b}{\log_c a}$$

$$3 \quad T_n = a + (n-1)d$$

$$4 \quad T_n = ar^{n-1}$$

$$5 \quad S_n = \frac{n}{2} [2a + (n-1)d]$$

$$6 \quad S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, \quad r \neq 1$$

$$7 \quad Z = \frac{X - \mu}{\sigma}$$

$$8 \quad P(X = r) = {}^n C_r p^r q^{n-r}, \quad p + q = 1$$

$$9 \quad {}^n P_r = \frac{n!}{(n-r)!}$$

$$10 \quad {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$11 \quad I = \frac{Q_1}{Q_0} \times 100$$

$$12 \quad \bar{I} = \frac{\sum W_i I_i}{\sum W_i}$$

$$13 \quad \sin^2 A + \cos^2 A = 1$$

$$\sin^2 A + \text{kos}^2 A = 1$$

$$14 \quad \sec^2 A = 1 + \tan^2 A$$

$$\text{sek}^2 A = 1 + \tan^2 A$$

$$15 \quad \text{cosec}^2 A = 1 + \cot^2 A$$

$$\text{kosek}^2 A = 1 + \text{kot}^2 A$$

$$16 \quad \sin(A \pm B) = \sin A \text{ kos } B \pm \text{kos } A \sin B$$

$$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$17 \quad \cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$\text{kos}(A \pm B) = \text{kos } A \text{ kos } B \mp \sin A \sin B$$

$$18 \quad \tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

$$19 \quad \sin 2A = 2 \sin A \cos A$$

$$\sin 2A = 2 \sin A \text{ kos } A$$

$$20 \quad \cos 2A = \cos^2 A - \sin^2 A$$

$$= 2 \cos^2 A - 1$$

$$= 1 - 2 \sin^2 A$$

$$\text{kos } 2A = \text{kos}^2 A - \sin^2 A$$

$$= 2 \text{kos}^2 A - 1$$

$$= 1 - 2 \sin^2 A$$

$$21 \quad \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$22 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$23 \quad a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = b^2 + c^2 - 2bc \text{ kos } A$$

$$24 \quad \text{Area of triangle / Luas segi tiga}$$

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

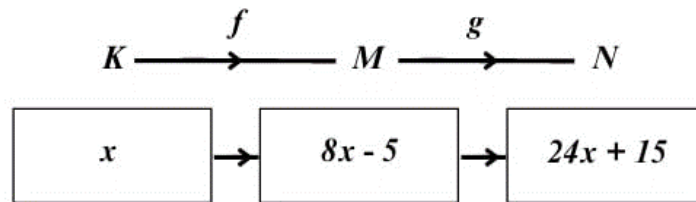
Bahagian A / Section A

[50 markah / marks]

Jawab semua soalan / Answer all questions.

- 1 Rajah 1 di bawah menunjukkan fungsi f yang memetakan set K kepada set M dan fungsi g yang memetakan set M kepada set N .

Diagram 1 shows the function f which maps set K to the set M and the function g which maps set M to set N .



Rajah 1 / Diagram 1

Cari / Find

- (a) fungsi yang memetakan set M kepada set K , dalam sebutan x .
the function which maps set M to set K , in terms of x .

[1 markah / mark]

- (b) $g(x)$.

[3 markah / marks]

Jawapan / Answer :

- 2 Encik Shuhaimi ingin membeli beberapa ekor kambing, rusa dan lembu untuk projek haiwan ternakannya. Jumlah haiwan yang perlu dibeli ialah 45 ekor. Dia memperuntukkan sebanyak RM82,500 untuk membeli kesemua jenis haiwan ternakannya itu. Seekor kambing berharga RM1,000 , seekor rusa berharga RM2,500 dan seekor lembu berharga RM1,500. Jumlah bilangan kambing dan rusa adalah dua kali bilangan lembu.

Encik Shuhaimi wants to buy some goats, deer and cows for his livestock project. The total number of animals to be purchased is 45 animals. He allocated as much as RM82,500 to buy all his livestock. A goat costs RM1,000, a deer costs RM2,500 and a cow costs RM1,500. The total number of goats and deer is twice the number of cows.

Berdasarkan pernyataan di atas, diberikan dua persamaan seperti berikut,
Based on the above statement, two equations are given as follows,

$$\begin{aligned}x + y + z &= 45 \\1000x + 2500y + 1500z &= 82500\end{aligned}$$

- (a) Tuliskan persamaan yang ketiga.

Write the third equation.

[1 markah / mark]

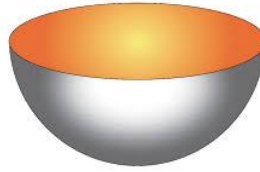
- (b) Seterusnya, berapakah bilangan setiap jenis haiwan yang akan dibeli oleh Encik Shuhaimi?

Hence, what is the number of each type of animal will Encik Shuhaimi buy?

[4 markah / marks]

Jawapan / Answer :

- 3 Rajah 3 menunjukkan sebuah bekas berbentuk hemisfera.
Diagram 3 shows a hemispherical shaped container.



Rajah 3 / *Diagram 3*

- a) Cari perubahan hampir dalam isipadu bagi sebuah hemisfera apabila jejari berubah daripada 15 cm kepada 15.02 cm.
Find the approximate change in the volume of the hemisphere when its radius changes from 15 cm to 15.02 cm.
- [3 markah / *marks*]
- b) Isipadu sebuah hemisfera menyusut pada kadar $5.4\pi \text{ cm}^3\text{s}^{-1}$. Cari kadar perubahan jejari hemisfera itu apabila jejari ialah 15 cm.
The volume of a hemisphere decreases at a rate of $5.4\pi \text{ cm}^3\text{s}^{-1}$. Find the rate of change in the radius of the hemisphere when the radius is 15 cm.

[3 markah / *marks*]

Jawapan / *Answer* :

4 Diberi bahawa $x = a^p$ dan $y = a^q$.

Given that $x = a^p$ and $y = a^q$.

(a) Buktikan hukum hasil bahagi logaritma iaitu $\log_a \frac{x}{y} = \log_a x - \log_a y$.

Prove that the division law of logarithm is $\log_a \frac{x}{y} = \log_a x - \log_a y$.

[3 markah / marks]

(b) Seterusnya, tunjukkan $\log_2 P - \log_2 Q = 2 \log_4 \frac{P}{Q}$.

Hence, show that $\log_2 P - \log_2 Q = 2 \log_4 \frac{P}{Q}$.

[3 markah / marks]

Jawapan / Answer :

- 5 (a) Sebuah jawatankuasa yang terdiri daripada 7 orang guru akan dipilih daripada 6 orang guru lelaki dan 5 orang guru perempuan. Cari bilangan ahli jawatankuasa berlainan yang boleh dibentuk jika bilangan guru lelaki mesti melebihi guru perempuan.

A committee that consists of 7 members is to be selected from 6 male teachers and 5 female teachers. Find the number of different committees that can be formed if the number of male teachers must exceed the number of female teachers.

[3 markah / marks]

- (b) 4 orang guru lelaki dan 3 orang guru perempuan disusun sebaris untuk sesi fotografi. Cari bilangan cara mereka boleh duduk jika 4 orang guru lelaki itu mesti duduk bersebelahan.

4 male teachers and 3 female teachers are to be arranged in a row for a photography session. Find the number of ways they can be seated if the 4 male teachers must be seated together.

[3 markah / marks]

Jawapan / Answer :

6 Diberi suatu fungsi kuadratik $f(x) = 9 - (x - 2)^2$.

Given a quadratic function $f(x) = 9 - (x - 2)^2$.

(a) Lakar graf $f(x)$ untuk $-1 \leq x \leq 5$.

Sketch the graph of $f(x)$ for $-1 \leq x \leq 5$.

[3 markah / marks]

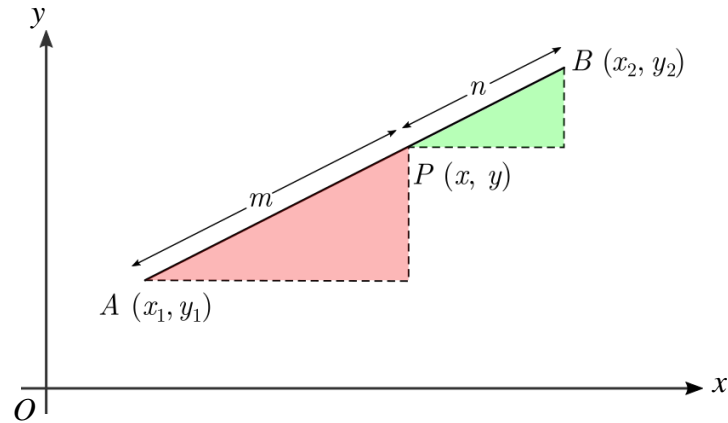
(b) Jika graf itu dipantulkan pada paksi- x , tulis fungsi kuadratik bagi lengkung itu.

If the graph is reflected about the x -axis, write the quadratic function of the curve.

[1 markah / 1 mark]

Jawapan / Answer :

- 7 Rajah 7 menunjukkan garis lurus AB pada satah Cartes.
Diagram 7 shows a straight line AB on a Cartesian plane.



Rajah 7 / Diagram 7

- (a) Terbitkan rumus pembahagi tembereng garis pada satah Cartes.
Derive the formula for divisor of line segment on the Cartesian plane.
[3 markah / marks]
- (b) Seterusnya, diberi titik $P(h, 5)$ membahagi tembereng garis yang menyambungkan titik $A(2, 2)$ dan titik $B(12, k)$ dengan keadaan $AP : PB = 3 : 2$. Cari nilai h dan k .
Hence, given that point $P(h, 5)$ divides the line segment joining point $A(2, 2)$ and $B(12, k)$ such that $AP : PB = 3 : 2$. Find the values of h and k .
[3 markah / marks]

Jawapan / Answer :

[Lihat halaman sebelah
SULIT

- 8 Diberi suatu jantang geometri,
Given that a geometric progression,

$$a, ar, ar^2, ar^3, ar^4, \dots \dots \dots, ar^{n-2}, ar^{n-1}$$

- (a) Terbitkan rumus bagi hasil tambah sebutan pertama hingga sebutan ke- n iaitu

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

Derive the formula for the sum of the first term to the n th term is

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

[3 markah / marks]

- (b) Seterusnya, nyatakan julat bagi nilai r .

Hence, state the range of values of r .

[1 markah / marks]

Jawapan / Answer :

9 Diberi $\int_3^5 f(x) dx = 10$ dan $\int_3^5 3[f(x) - qx] dx = 6$, cari

Given that $\int_3^5 f(x) dx = 10$ and $\int_3^5 3[f(x) - qx] dx = 6$, find

(a) nilai q ,

the value of q ,

[3 markah / marks]

(b) $\frac{1}{2} \int_5^3 f(x) dx + 10$

[2 markah / marks]

Jawapan / Answer :

[Lihat halaman sebelah

- 10 Diberi bahawa $\cos x \cos y = \frac{1}{4}$ dan $\sin x \sin y = \frac{3}{8}$. Cari nilai bagi,
Given that $\cos x \cos y = \frac{1}{4}$ and $\sin x \sin y = \frac{3}{8}$. Find the value of,

- (a) (i) $\cos (x - y)$
 $\cos (x - y)$
- (ii) $\cos (x + y)$
 $\cos (x + y)$

[3 markah / marks]

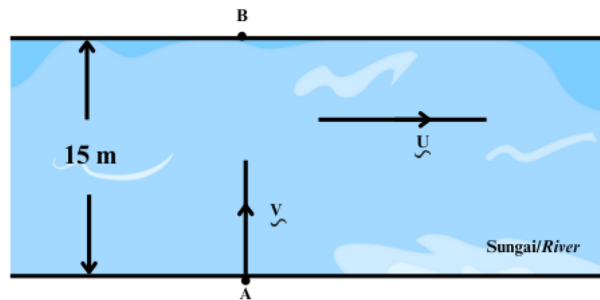
- (b) Seterusnya, cari nilai-nilai yang mungkin bagi x dan y di antara 0° dan 90° .
Hence, find the possible values of x and y between 0° and 90° .

[3 markah / marks]

Jawapan / Answer :

- 11 Rajah 11 menggambarkan Ainul dan Juliana ingin berenang dari titik A ke titik B menyeberang sungai yang lebarnya 15 meter.

Diagram 11 depicts Ainul and Juliana wanting to swim from point A to point B across a river that is 15 meters wide.



Rajah 11 / Diagram 11

- (a) Ainul berenang dengan halaju malar $V = 13\hat{i} - 8\hat{j} \text{ m s}^{-1}$. Terdapat arus tetap $U = 2\hat{i} \text{ m s}^{-1}$ ke kanan. Cari,

Ainul swims with constant velocity of $V = 13\hat{i} - 8\hat{j} \text{ m s}^{-1}$. There is a constant current of $U = 2\hat{i} \text{ m s}^{-1}$ to the right. Find,

- magnitud halaju Ainul.
the magnitude of Ainul's velocity.
- vector unit dalam arah halaju Ainul.
the unit vector in the direction of Ainul's velocity.

[4 markah / marks]

- (b) Juliana berenang dengan halaju malar $V = 3.0 \text{ m s}^{-1}$. Terdapat arus tetap $U = 2.0 \text{ m s}^{-1}$ ke kanan.

Juliana swims with constant velocity of $V = 3.0 \text{ m s}^{-1}$. There is a constant current of $U = 2.0 \text{ m s}^{-1}$ to the right.

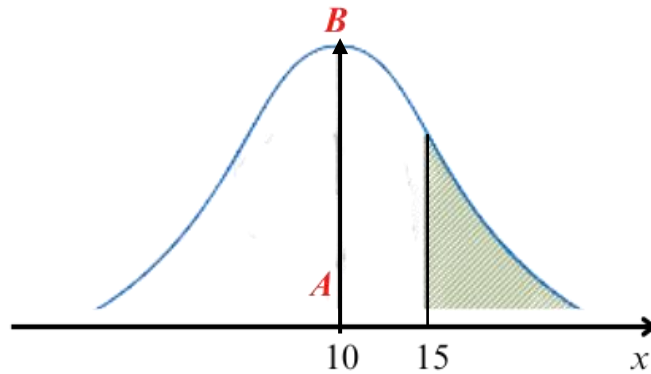
- Cari vektor paduan bagi halaju Juliana.
Find the resultant vector of Juliana's velocity.
- Berapa jauhkah Juliana tersasar dari B ketika dia sampai ke seberang sungai?
How far is Juliana from B when she reaches the other side of the river?

[3 markah / marks]

Jawapan / *Answer* :

12 Rajah 12 menunjukkan graf bagi taburan normal, $X \sim N(\mu, \sigma^2)$.

Diagram 12 shows the graph of normal distribution, $X \sim N(\mu, \sigma^2)$.



Rajah 12/ Diagram 12

Diberi luas rantau berlorek ialah 0.295 dan AB ialah paksi simetri bagi graf itu, cari
Given that the area of the shaded region is 0.295 and AB is the axis of symmetry of the graph, find

(a) nilai μ dan σ .

the value of μ and σ .

[3 markah / marks]

(b) seterusnya, cari nilai $P(7 \leq X \leq 15)$.

hence, find the value $P(7 \leq X \leq 15)$.

[2 markah / marks]

Jawapan / Answer :

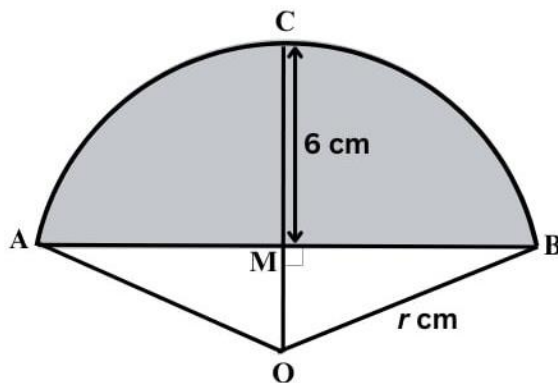
Bahagian B / Section B

(16 markah / marks)

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

- 13** Rajah 13 menunjukkan satu sektor bulatan dengan pusat O. Tembereng berlorek ABC mempunyai ketinggian MC iaitu 6 cm.

Diagram 13 shows a sector of a circle with centre O. The shaded segment ABC has a height of MC which is 6 cm.



Rajah 13 / Diagram 13

AB ialah perentas bagi sektor dengan panjang 16 cm. M ialah titik tengah AB. Cari
AB is a chord of the sector with a length of 16 cm. M is the midpoint of AB. Find

[Guna / Use $\pi = 3.142$]

- (a) nilai r .

the value of r .

[3 markah / marks]

- (b) $\sphericalangle AOB$ dalam radian.

$\sphericalangle AOB$ in radians.

[3 markah / marks]

- (c) luas, dalam cm^2 , tembereng berlorek.

the area, in cm^2 , of the shaded segment.

[2 markah / marks]

[Lihat halaman sebelah

Jawapan / *Answer* :

- 14 (a) Diberi persamaan lengkung $y = 5 + 6x^2 - x^3$ melalui titik $P(1, 10)$. Cari persamaan tangen kepada lengkung itu pada titik P .

Given the equation of the curve $y = 5 + 6x^2 - x^3$ passes through point $P(1, 10)$. Find the equation of tangent to the curve at point P .

[4 markah / marks]

- (b) Cari koordinat titik pusingan bagi lengkung $y = 5 + 6x^2 - x^3$.

Find the coordinate of turning points of the curve $y = 5 + 6x^2 - x^3$.

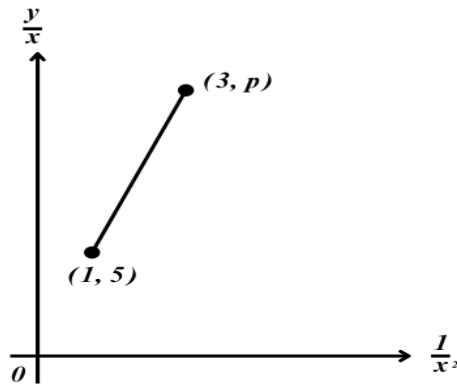
[4 markah / marks]

Jawapan / Answer :

[Lihat halaman sebelah

- 15 (a) Rajah 15 menunjukkan graf garis lurus $\frac{y}{x}$ melawan $\frac{1}{x^2}$. Suatu garis lurus melalui titik $(1, 5)$ dan $(3, p)$ mewakili persamaan $y = \frac{2}{x} + qx$, di mana p dan q ialah pemalar.

Diagram 15 shows the straight line graph of $\frac{y}{x}$ against $\frac{1}{x^2}$. The straight line which passes through the points $(1, 5)$ and $(3, p)$ represents the equation $y = \frac{2}{x} + qx$, where p and q are constants.



Rajah 15 / Diagram 15

Cari nilai p dan q .

Find the value of p and q .

[4 markah / 4 marks]

- (b) Jika persamaan bukan linear $\frac{y}{k\sqrt{x}} = p$, di mana k dan p ialah pemalar ditukarkan kepada bentuk $Y = mX + c$, nyatakan Y , X , m dan c dalam sebutan x , y , k dan p .

If the non-linear equation $\frac{y}{k\sqrt{x}} = p$, where k and p are constants, is converted to the linear form $Y = mX + c$, state Y , X , m and c in term of x , y , k and p .

[4 markah / 4 marks]

Jawapan / Answer :

[Lihat halaman sebelah

KERTAS PEPERIKSAAN TAMAT
END OF QUESTION PAPER

**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

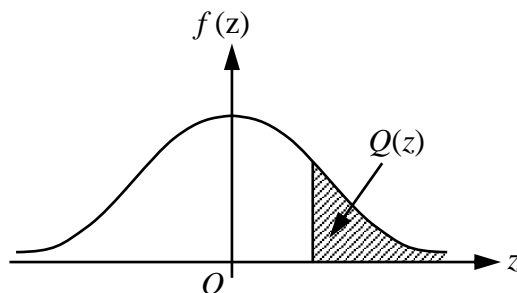
Bagi z negatif guna hubungan :

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

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

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

[Lihat halaman sebelah

SULIT

**MAKLUMAT UNTUK CALON
INFORMATION FOR CANDIDATES**

1. Kertas soalan ini mengandungi **15** soalan
This question paper consists of 15 questions.
2. Jawab **semua** soalan dalam Bahagian A dan **dua** soalan dalam Bahagian B.
Answer all questions in Section A and two questions in Section B.
3. Tulis jawapan anda dalam ruang yang disediakan dalam kertas soalan
Write your answers in the space 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 **21** .
The Upper Tail Probability $Q(z)$ For The Normal Distribution $N(0, 1)$ Table is provided on page 21 .
10. Anda dibenarkan menggunakan kalkulator saintifik
You may use a scientific calculator.
11. Serahkan kertas soalan ini kepada pengawas peperiksaan di akhir peperiksaan.
Hand in this question paper to the invigilator at the end of the examination.

[Lihat halaman sebelah