NAMA ..... KELAS .....

3472/1
Matematik
Tambahan
Kertas 1
Oktober/ November
2 jam

MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN DARUL KHUSUS

PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH NEGERI SEMBILAN 2023

MATEMATIK TAMBAHAN
Kertas 1
Dua jam

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1 *Tulis nama dan kelas anda pada ruangan yang disediakan.*

2 *Kertas soalan ini adalah dalam dwibahasa.*

3 *Soalan dalam Bahasa Melayu mendahului soalan yang sepadan dalam Bahasa Inggeris.*

4 *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam Bahasa Inggeris atau Bahasa Melayu.*

5 *Calon dikehendaki membaca maklumat di halaman* **28.**

Untuk Kegunaan Pemeriksa			
Bahagian	**Soalan**	**Markah Penuh**	**Markah Diperoleh**
A	1	3	
	2	3	
	3	5	
	4	4	
	5	6	
	6	8	
	7	6	
	8	6	
	9	7	
	10	6	
	11	7	
	12	3	
B	13	8	
	14	8	
	15	8	
Jumlah		80	

Kertas soalan ini mengandungi **27** halaman bercetak dan **1** halaman kosong.

[Lihat halaman sebelah

RUMUS
FORMULAE

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

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 $\log_a \dfrac{m}{n} = \log_a m - \log_a n$

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

8 $\log_a b = \dfrac{\log_c b}{\log_c a}$

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

10 $S_n = \dfrac{n}{2}[2a + (n-1)d]$

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

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

13 $S_\infty = \dfrac{a}{1-r}$, $|r| < 1$

14 $y = uv$, $\dfrac{dy}{dx} = u\dfrac{dv}{dx} + v\dfrac{du}{dx}$

15 $y = \dfrac{u}{v}$, $\dfrac{dy}{dx} = \dfrac{v\dfrac{du}{dx} - u\dfrac{dv}{dx}}{v^2}$

16 $\dfrac{dy}{dx} = \dfrac{dy}{du} \times \dfrac{du}{dx}$

17 Luas di bawah lengkung
Area under a curve

$= \int_a^b y \, dx$ atau (*or*)

$= \int_a^b x \, dy$

18 Isi padu kisaran
Volume of revolution

$= \int_a^b \pi y^2 \, dx$ atau (*or*)

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

19 $I = \dfrac{Q_1}{Q_0} \times 100$

20 $\bar{I} = \dfrac{\sum W_i I_i}{\sum W_i}$

21 ${}^nP_r = \dfrac{n!}{(n-r)!}$

22 ${}^nC_r = \dfrac{n!}{(n-r)!r!}$

23 $P(X = r) = {}^nC_r p^r q^{n-r}$, $p + q = 1$

24 Min / *Mean* , $\mu = np$

25 $\sigma = \sqrt{npq}$

26 $Z = \dfrac{X - \mu}{\sigma}$

27 Panjang lengkok, $s = j\theta$
Arc length, $s = r\theta$

28 Luas sektor, $L = \dfrac{1}{2} j^2 \theta$

Area of sector, $A = \dfrac{1}{2} r^2 \theta$

29 $\sin^2 A + \text{kos}^2 A = 1$
$\sin^2 A + \cos^2 A = 1$

30 $\text{sek}^2 A = 1 + \tan^2 A$
$\sec^2 A = 1 + \tan^2 A$

31 $\text{kosek}^2 A = 1 + \text{kot}^2 A$
$\text{cosec}^2 A = 1 + \cot^2 A$

32 $\sin 2A = 2 \sin A \, kos \, A$
$\sin 2A = 2 \sin A \cos A$

33 $kos \, 2A = kos^2 A - \sin^2 A$
$= 2 \, kos^2 A - 1$
$= 1 - 2 \sin^2 A$

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

34 $\tan 2A = \dfrac{2 \tan A}{1 - \tan^2 A}$

35 $\sin (A \pm B) = \sin A \, kos \, B \pm kos \, A \sin B$
$\sin (A \pm B) = \sin A \cos B \pm \cos A \sin B$

36 $kos \, (A \pm B) = kos \, A \, kos \, B \mp \sin A \sin B$
$\cos (A \pm B) = \cos A \cos B \mp \sin A \sin B$

37 $\tan (A \pm B) = \dfrac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$

38 $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

39 $a^2 = b^2 + c^2 - 2bc \, kos \, A$
$a^2 = b^2 + c^2 - 2bc \cos A$

40 Luas segi tiga / *Area of triangle*
$= \dfrac{1}{2} ab \sin C$

41 Titik yang membahagi suatu tembereng garis
A point dividing a segment of a line
$(x, y) = \left(\dfrac{nx_1 + mx_2}{m+n}, \dfrac{ny_1 + my_2}{m+n} \right)$

42 Luas segi tiga / *Area of triangle*
$= \dfrac{1}{2} \left| (x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3) \right|$

43 $|\mathbf{r}| = \sqrt{x^2 + y^2}$

44 $\hat{\mathbf{r}} = \dfrac{x\mathbf{i} + y\mathbf{j}}{\sqrt{x^2 + y^2}}$

[Lihat halaman sebelah

Bahagian A
[64 *markah*]
Jawab **semua** *soalan.*

1 Diberi m dan n ialah punca-punca bagi persamaan kuadratik $x^2 = 2x + 3$. Bentuk persamaan kuadratik yang mempunyai punca-punca $-m$ dan $-n$. [3 *markah*]
Given m *and* n *are the roots of the quadratic equation* $x^2 = 2x + 3$. *Form a quadratic equation with roots* $-m$ *and* $-n$. [3 *marks*]

Jawapan / *Answer* :

2 Diberi $f(x)=\frac{\sqrt{x+9}}{3}, x \geq p$. Cari nilai bagi

Given $f(x)=\frac{\sqrt{x+9}}{3}, x \geq p$. *Find the value of*

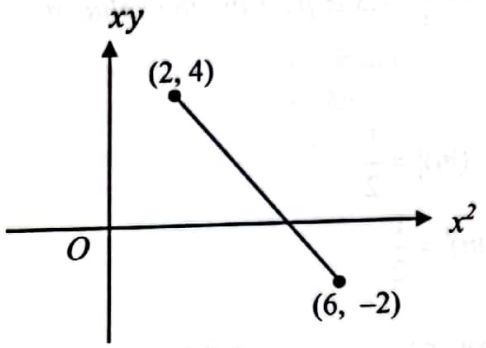
(*a*) p, [1 *markah*] [1 *mark*]

(*b*) m, jika $|f(m)|=\frac{1}{2}$. [2 *markah*]

m, *if* $|f(m)|=\frac{1}{2}$. [2 *marks*]

Jawapan / *Answer* :

3 (*a*) Rajah 1 menunjukkan graf garis lurus yang diperoleh dengan memplotkan xy melawan x^2.
Diagram 1 *shows a straight line graph by plotting* xy *against* x^2.



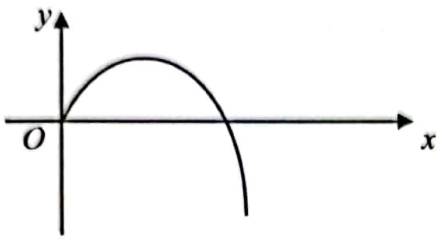
Rajah 1
Diagram 1

Ungkapkan y dalam sebutan x. [3 *markah*]
Express y *in terms of* x. [3 *marks*]

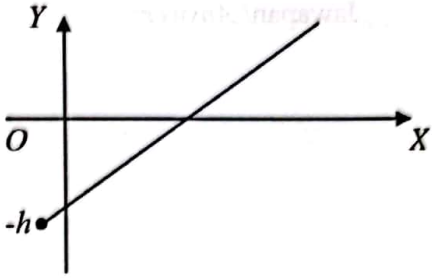
Jawapan/ *Answer*:

(*b*) Rajah 2 menunjukkan graf bagi $y = -hx^2 + kx$ dan Rajah 3 menunjukkan garis lurus penyuaian terbaik yang diperolehi apabila graf $y = -hx^2 + kx$ ditukar kepada bentuk linear.

Diagram 2 shows the graph of $y = -hx^2 + kx$ *and Diagram 3 shows the line of best fit obtained when the graph of* $y = -hx^2 + kx$ *is reduced to linear form.*



Rajah 2
Diagram 2



Rajah 3
Diagram 3

Nyatakan paksi-*Y* dan paksi-*X* dalam sebutan *x* dan/ atau *y*. [2 *markah*]
State Y-axis and X-axis in terms of x and/ or y. [2 *marks*]

Jawapan/ *Answer*:

[Lihat halaman sebelah

4 Diberi sebutan ke-n dalam suatu janjang geometri ialah $T_n = pq^{2n-1}$. Jika sebutan ke-5 adalah 16 kali sebutan ke-3, cari nisbah sepunya di mana $r > 1$. [4 *markah*]

The n^{th} term of a geometric progression is given by $T_n = pq^{2n-1}$. If the 5^{th} term is 16 times the 3^{rd} term, find the common ratio where $r > 1$. [4 *marks*]

Jawapan/ *Answer*:

5 Diberi suatu jujukan dengan jumlah n sebutan yang pertamanya ialah $S_n = 2n^2 + 3n$.
Given a sequence with the sum of the first n terms is given by $S_n = 2n^2 + 3n$.

(*a*) Ungkapkan S_{n-1}, seterusnya cari sebutan ke-n. [3 *markah*]
Express S_{n-1}, *hence find the* n^{th} *term.* [3 *marks*]

(*b*) Tunjukkan bahawa jujukan ini ialah suatu janjang aritmetik. [3 *markah*]
Show that this sequence is an arithmetic progression. [3 *marks*]

Jawapan/ *Answer*:

[Lihat halaman sebelah

6 (*a*) Diberi $\int_1^m \frac{g(x)}{2}dx = n$ dan $\int_1^m [g(x)-x]dx = \frac{37}{2}$ dengan keadaan $m > 0$.

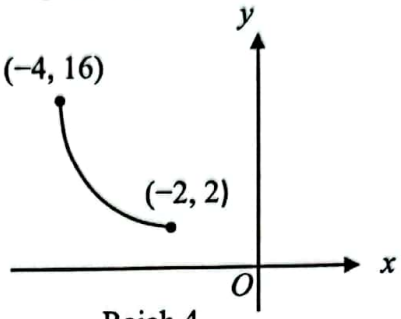
Ungkapkan m dalam sebutan n. [3 *markah*]

Given $\int_1^m \frac{g(x)}{2}dx = n$ *and* $\int_1^m [g(x)-x]dx = \frac{37}{2}$ *such that* $m > 0$.

Express m in terms of n. [3 *marks*]

(*b*) Rajah 4 menunjukkan sebahagian daripada suatu graf lengkung, $y = f(x)$.

Diagram 4 *shows part of a curve graph,* $y = f(x)$.



Rajah 4

Diagram 4

(i) Cari nilai bagi $\int_{-4}^{-2} y\,dx + \left|\int_2^{16} x\,dy\right|$.

Find the value of $\int_{-4}^{-2} y\,dx + \left|\int_2^{16} x\,dy\right|$.

(ii) Diberi fungsi kecerunan bagi lengkung tersebut ialah $4x+5$. Cari $f(x)$.

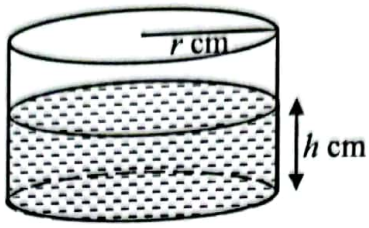
Given the gradient function of the curve is $4x+5$. *Find* $f(x)$.

[5 *markah*]

[5 *marks*]

Jawapan / *Answer* :

7 Rajah 5 menunjukkan sebuah bekas besi yang berbentuk silinder tertutup. Diberi jejari bekas, r cm, dan tinggi air dalam bekas, h cm.
Diagram 5 shows an iron container with a close top is cylindrical in shape. Given the radius of the container, r cm, and the height of water in the container, h cm.



Rajah 5
Diagram 5

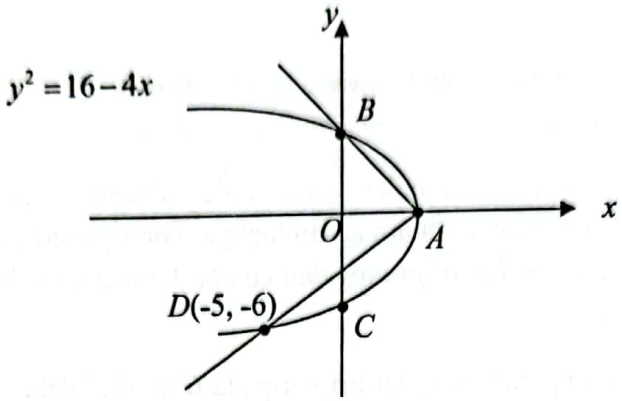
Diberi bahawa isi padu air dalam bekas ialah 175π cm^3 dan $h = 7$ cm. Apabila bekas tersebut direndam dalam air sejuk, tinggi air mengalami peningkatan kecil sebanyak p cm.
[Isi padu silinder, $V = \pi r^2 h$]
Given that the volume of the water in the container is 175π cm^3 and $h = 7$ cm. When the container is soaked in cool water, the height of the water shows a small increase in p cm.
[*Volume of cylinder*, $V = \pi r^2 h$]
Cari
Find

(*a*) perubahan kecil bagi jejari, dalam cm, dalam sebutan p, [4 *markah*]
small change in the radius, in cm, *in terms of p,* [4 *marks*]

(*b*) peratus perubahan kecil bagi jejari, seterusnya perihalkan peratusan tersebut.
the percentage of the small change in the radius, hence describe the percentage.
[2 *markah*]
[2 *marks*]

10 Rajah 6 menunjukkan suatu lengkung $y^2 = 16 - 4x$ yang menyilang paksi-x pada titik A dan paksi-y pada titik B dan titik C. Titik $D(-5, -6)$ terletak di atas lengkung tersebut.

Diagram 6 shows the curve $y^2 = 16 - 4x$ *intersects x-axis at point A and y-axis at point B and point C. Point* $D(-5, -6)$ *lies on the curve.*



Rajah 6
Diagram 6

(*a*) Cari persamaan garis lurus AC dalam bentuk pintasan. [2 *markah*]
Find the equation of the straight line AC in intercept form. [2 *marks*]

(*b*) Hitung luas segi tiga ABD, dalam unit^2. [2 *markah*]
Calculate the area of triangle ABD, in unit^2. [2 *marks*]

(*c*) Tentukan sama ada garis lurus AD berserenjang dengan garis lurus AB. Justifikasi jawapan anda dengan menggunakan kaedah pengiraan. [2 *markah*]
Determine whether the straight line AD is perpendicular to the straight line AB. Justify your answer by using method of calculation. [2 *marks*]

11 Harith merupakan seorang agen jualan suatu produk kesihatan dari luar negara. Syarikat itu membayar bonus sebanyak 25% daripada jualan bulanan seorang agen. Diberi $g(x)$ ialah fungsi bonus yang diterima oleh Harith dan x ialah jualan bulanan. Mulai bulan Mei 2022, syarikat menetapkan satu polisi baharu. Jumlah jualan ialah jualan bulanan yang telah ditolak dengan yuran keahlian, iaitu RM380 sebulan. Diberi $f(x)$ ialah fungsi yang mewakili jumlah jualan yang diperoleh bermula bulan Mei 2022.

Harith is an agent selling health products from abroad. The company pays 25% of the agent's monthly sales. Given $g(x)$ is the bonus function that Harith will receive and x is the monthly sales. In the beginning of May 2022, the company sets a new policy. The total sales are monthly sales which have been deducted with a membership fee of RM380 per month. Given $f(x)$ is a function that represents the total sales earned starting May 2022.

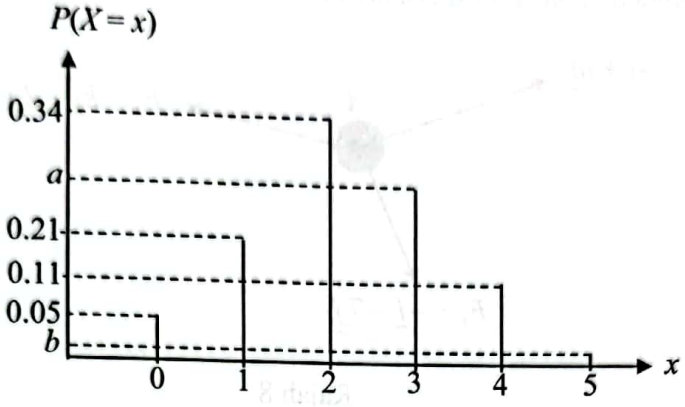
(*a*) Nyatakan fungsi $f(x)$ dan $g(x)$. Seterusnya, tentukan fungsi gubahan yang mewakili bonus bulanan yang diperoleh oleh Harith. [3 *markah*]
State the function of $f(x)$ and $g(x)$. Hence, determine the composite function that represents monthly bonus received by Harith. [3 *marks*]

(*b*) Harga seunit produk ialah RM373. Harith mesti menerima bonus sekurang-kurangnya RM5500 jika hendak mencapai pangkat yang lebih tinggi. Berapakah kuantiti minimum produk yang perlu dijual untuk mencapai misi ini? [4 *markah*]
The price of a product is RM373. *Harith must receive a bonus of at least* RM5500 *if he wishes to achieve a higher rank. What is the minimum quantity of product needs to be sold to achieve his mission?* [4 *marks*]

Jawapan / *Answer*:

12 Pengurus sebuah kilang membuat kajian terhadap pekerja yang masuk lewat dalam 5 hari berkerja. Rajah 7 menunjukkan graf taburan Binomial kajian tersebut, dengan keadaan X mewakili bilangan hari pekerja yang masuk lewat.

The manager of a factory conducted research on workers who were late in 5 working days. Diagram 7 shows a Binomial distribution graph of the research, such that X represents the number of days workers who were late.



Rajah 7
Diagram 7

(*a*) Cari nilai $a + b$. [1 *markah*]
Find the value of $a + b$. [1 *mark*]

(*b*) Kira kebarangkalian seorang pekerja yang tidak lewat. [2 *markah*]
Calculate the probability of a worker who were not late. [2 *marks*]

Jawapan / *Answer* :

[Lihat halaman sebelah

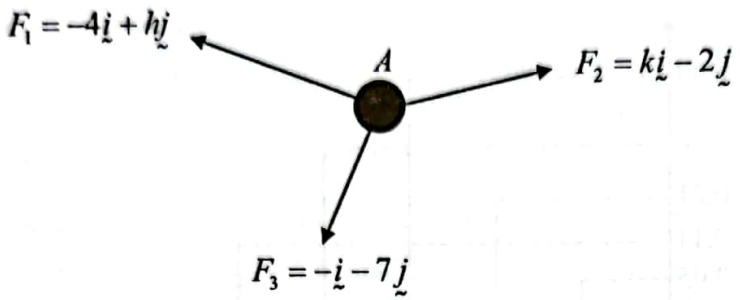
Bahagian B

[16 *markah*]

Bahagian ini mengandungi **tiga** *soalan. Jawab* **dua** *soalan.*

13 Rajah 8 menunjukkan satu objek *A* yang mengalami tiga daya, F_1, F_2 dan F_3 diukur dalam Newton.

Diagram 8 *shows an object A experiences three forces,* F_1, F_2 *and* F_3, *measured in* Newton.



Rajah 8

Diagram 8

(*a*) Cari nilai *h* dan *k* jika objek tidak bergerak. [2 *markah*]

Find the value of h and of k if the object is not moving. [2 *marks*]

(*b*) Cari magnitud daya paduan yang bertindak ke atas objek itu jika daya F_3 dikeluarkan dari sistem. Beri jawapan anda dalam bentuk surd. [3 *markah*]

Find magnitude of the resultant force acting on the object if force F_3 *is removed from the system. Give your answer in the surd form.* [3 *marks*]

(*c*) Andaikan ketiga-tiga daya ini berada di atas satah Cartes. Jika daya F_1 bertambah 2 unit dalam arah paksi-x dan berkurang 5 unit dalam arah paksi-y, cari vektor unit objek *A* dalam arah daya F_1. [3 *markah*]

Assume that the three forces lie on a Cartesian plane. If the force F_1 *is increased by 2 units in the direction of* x*-axis and decreased by 5 units in the direction of* y*-axis, find the unit vector of object A in the direction of* F_1. [3 *marks*]

15 (*a*) Jika $\tan(A+B)=-3$ dan $\tan A=2$. Cari nilai $\tan B$. [2 *markah*]

If $\tan(A+B)=-3$ *and* $\tan A=2$, *find the value of* $\tan B$. [2 *marks*]

(*b*) Selesaikan persamaan $\sin^2 x=1-\text{kos } x+4\text{kos}\left(\frac{3\pi}{2}\right)$ bagi $0\le x\le 2\pi$. [3 *markah*]

Solve the equation $\sin^2 x=1-\cos x+4\cos\left(\frac{3\pi}{2}\right)$ *for* $0\le x\le 2\pi$. [3 *marks*]

(*c*) Diberi $\sin\theta = 4k$, dengan keadaan k ialah pemalar dan $90°\le\theta\le 180°$.
Cari $\text{kos}^2\frac{1}{2}\theta$ dalam sebutan k. [3 *markah*]

Given that $\sin\theta = 4k$, *such that* k *is a constant and* $90°\le\theta\le 180°$.
Find $\cos^2\frac{1}{2}\theta$ *in terms of* k. [3 *marks*]

Jawapan / *Answer* :

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

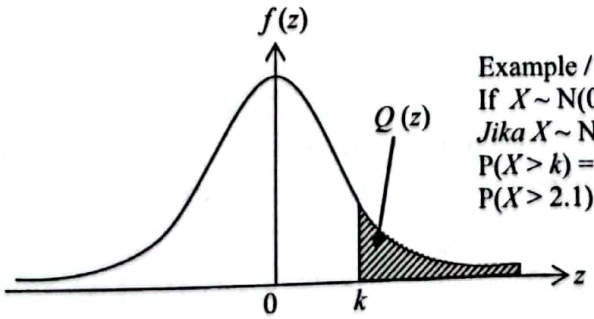
z	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
											Minus / *Tolak*								
0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641	4	8	12	16	20	24	28	32	36
0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247	4	8	12	16	20	24	28	32	36
0.2	.4207	.4168	.4219	.4090	.4052	.4013	.3974	.3936	.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	15	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
				.$0^2$990	.$0^2$964	.$0^2$939	.$0^2$914				3	5	8	10	13	15	18	20	23
								.$0^2$889	.$0^2$866	.$0^2$842	2	5	7	9	12	14	16	16	21
2.4	.$0^2$820	.$0^2$798	.$0^2$776	.$0^2$755	.$0^2$734						2	4	6	8	11	13	15	17	19
						.$0^2$714	.$0^2$695	.$0^2$676	.$0^2$657	.$0^2$639	2	4	6	7	9	11	13	15	17
2.5	.$0^2$621	.$0^2$604	.$0^2$587	.$0^2$570	.$0^2$554	.$0^2$539	.$0^2$523	.$0^2$508	.$0^2$494	.$0^2$480	2	3	5	6	8	9	11	12	14
2.6	.$0^2$466	.$0^2$453	.$0^2$440	.$0^2$427	.$0^2$415	.$0^2$402	.$0^2$391	.$0^2$379	.$0^2$368	.$0^2$357	1	2	3	5	6	7	9	9	10
2.7	.$0^2$347	.$0^2$336	.$0^2$326	.$0^2$317	.$0^2$307	.$0^2$298	.$0^2$289	.$0^2$280	.$0^2$272	.$0^2$264	1	2	3	4	5	6	7	8	9
2.8	.$0^2$256	.$0^2$248	.$0^2$240	.$0^2$233	.$0^2$226	.$0^2$219	.$0^2$212	.$0^2$205	.$0^2$199	.$0^2$193	1	1	2	3	4	4	5	6	6
2.9	.$0^2$187	.$0^2$181	.$0^2$175	.$0^2$169	.$0^2$164	.$0^2$159	.$0^2$154	.$0^2$149	.$0^2$144	.$0^2$139	0	1	1	2	2	3	3	4	4
3.0	.$0^2$135	.$0^2$131	.$0^2$126	.$0^2$122	.$0^2$118	.$0^2$114	.$0^2$111	.$0^2$107	.$0^2$104	.$0^2$100	0	1	1	2	2	2	3	3	4

For negative z use relation:
Bagi z negatif guna hubungan:

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

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

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



Example / *Contoh*:
If $X \sim N(0, 1)$, then
Jika $X \sim N(0, 1)$, *maka*
$P(X > k) = Q(k)$
$P(X > 2.1) = Q(2.1) = 0.0179$

[Lihat halaman sebelah

MAKLUMAT UNTUK CALON
INFORMATION FOR CANDIDATES

1. Kertas soalan ini mengandungi dua bahagian: **Bahagian A** dan **Bahagian B**.
   *This question paper consists of two sections: **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 pada ruang yang disediakan dalam kertas soalan.
   Write your answers in the spaces provided in this 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 baru.
   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** dan **3**.
   *A list of formulae is provided on page **2** and **3**.*

9. Jadual Kebarangkalian Hujung Atas $Q(z)$ Bagi Taburan Normal $N(0, 1)$ disediakan di halaman **27**.
   *The Upper Tail Probability $Q(z)$ For the Normal Distribution $N(0, 1)$ Table is provided on page **27**.*

10. Anda dibenarkan menggunakan kalkulator saintifik.
    You may use a scientific calculator.

11. Serahkan kertas soalan ini kepada pengawas peperiksaan pada akhir peperiksaan.
    Hand in this question paper to the invigilator at the end of the examination.