

Name :

Form :

MAJLIS PENGETUA SEKOLAH MALAYSIA

**PERCUBAAN SIJIL PELAJARAN MALAYSIA
MATEMATIK TAMBAHAN**

3472 / 1

**Kertas 1
Ogos 2015
2 jam**

Dua jam

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DIBERITAHU**

1. *Tulis nama dan tingkatan anda pada ruangan 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 bahasa Melayu.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

<i>Untuk Kegunaan Pemeriksa</i>		
Soalan	Markah Penuh	Markah Diperolehi
1	2	
2	2	
3	2	
4	3	
5	3	
6	3	
7	3	
8	3	
9	3	
10	3	
11	3	
12	4	
13	2	
14	4	
15	3	
16	3	
17	4	
18	4	
19	3	
20	4	
21	4	
22	4	
23	4	
24	3	
25	4	
TOTAL	80	

Kertas soalan ini mengandungi **26** halaman bercetak

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS KALKULUS

$$1 \quad y = uv, \quad \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

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

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

4 Area under a curve
Luas di bawah lengkung

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

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

5 Volume of revolution
Isipadu kisanan

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

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

STATISTIC
STATISTIK

$$1 \quad \bar{x} = \frac{\sum x}{N}$$

$$2 \quad \bar{x} = \frac{\sum fx}{\sum f}$$

$$3 \quad \sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}} = \sqrt{\frac{\sum x^2 - \bar{x}^2}{N}}$$

$$4 \quad \sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{\frac{\sum fx^2 - \bar{x}^2}{\sum f}}$$

$$5 \quad m = L + \left[\frac{\frac{1}{2}N - F}{f_m} \right] C$$

$$6 \quad I = \frac{Q_1}{Q_0} \times 100$$

$$7 \quad \bar{I} = \frac{\sum w_i I_i}{\sum w_i}$$

$$8 \quad {}^n P_r = \frac{n!}{(n-r)!}$$

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

$$10 \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$11 \quad P(x=r) = {}^n C_r p^r q^{n-r}, p+q=1, p+q=1$$

$$12 \quad \text{Mean/ Min, } \mu = np$$

$$13 \quad \sigma = \sqrt{npq}$$

$$14 \quad z = \frac{x - \mu}{\sigma}$$

GEOMETRY
GEOMETRI

$$1 \quad \text{Distance / Jarak} \\ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$2 \quad \text{Midpoint / Titik tengah} \\ (x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$3 \quad \text{A point dividing a segment of a line} \\ \text{Titik yang membahagi suatu tembereng garis} \\ (x, y) = \left(\frac{nx_1 + mx_2}{m+n}, \frac{ny_1 + my_2}{m+n} \right)$$

$$6 \quad \text{Area of triangle / Luas segitiga} = \\ \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

$$5 \quad |r| = \sqrt{x^2 + y^2}$$

$$6 \quad \hat{r} = \frac{xi + yj}{\sqrt{x^2 + y^2}}$$

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TRIGONOMETRY
TRIGONOMETRI

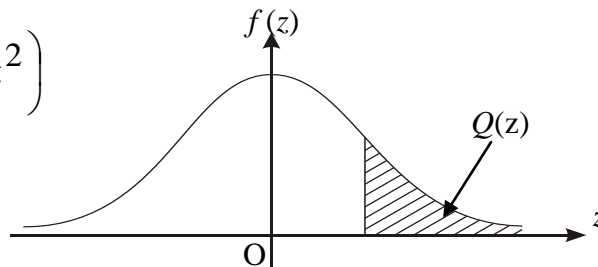
- | | |
|---|---|
| <p>1 Arc length, $s = r\theta$
Panjang lengkok, $s = j\theta$</p> <p>2 Area of sector, $L = \frac{1}{2}r^2\theta$
Luas sektor, $L = \frac{1}{2}j^2\theta$</p> <p>3 $\sin^2 A + \cos^2 A = 1$
$\sin^2 A + \text{kos}^2 A = 1$</p> <p>4 $\sec^2 A = \tan^2 A + 1$
$\text{sek}^2 A = \tan^2 A + 1$</p> <p>5 $\text{cosec}^2 A = 1 + \cot^2 A$
$\text{kosec}^2 A = 1 + \text{kot}^2 A$</p> <p>6 $\sin 2A = 2 \sin A \cos A$
$\sin 2A = 2 \sin A \text{kos} A$</p> <p>7 $\cos 2A = \cos^2 A - \sin^2 A$
$= 2 \cos^2 A - 1$
$= 1 - 2 \sin^2 A$</p> <p>$\text{kos} 2A = \text{kos}^2 A - \sin^2 A$
$= 2 \text{kos}^2 A - 1$
$= 1 - 2 \sin^2 A$</p> | <p>8 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
$\sin(A \pm B) = \sin A \text{kos} B \pm \text{kos} A \sin B$</p> <p>9 $\cos(A \pm B) = \cos A \cos B \pm \sin A \sin B$
$\text{kos}(A \pm B) = \text{kos} A \text{kos} B \pm \sin A \sin B$</p> <p>10 $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$</p> <p>11 $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$</p> <p>12 $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$</p> <p>13 $a^2 = b^2 + c^2 - 2bc \cos A$
$a^2 = b^2 + c^2 - 2b \text{ckos} A$</p> <p>14 Area of triangle / Luas segitiga
$= \frac{1}{2} ab \sin C$</p> |
|---|---|

**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	Minus / Tolak								
											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

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

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



Example / Contoh:

If $X \sim N(0, 1)$, then $P(X > k) = Q(k)$
 Jika $X \sim N(0, 1)$, maka $P(X > k) = Q(k)$

[Lihat halaman sebelah

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

1. Given the relation between Set P and Set Q is shown in the form of ordered pairs $\{(-2,0), (1,3), (3,5), (m,-1)\}$ is defined by $g(x) = x + 2$.

Diberi hubungan antara Set P dan Set Q ditunjukkan dalam bentuk pasangan bertertib $\{(-2,0), (1,3), (3,5), (m,-1)\}$ ditakrifkan sebagai $g(x) = x + 2$.

- (a) Find the value of m .
Cari nilai bagi m .
- (b) State the codomain of the relation.
Nyatakan kodomain bagi hubungan di atas.

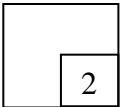
[2 marks]
[2 markah]

Answer/Jawapan

(a)

(b)

1



2. The functions of f and g below are defined by
Fungsi f dan g ditakrifkan di bawah sebagai

$$f(x) = 3x - 2$$

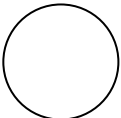
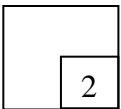
$$g(x) = kx - 6$$

Find the value of k if $fg = gf$ when k is a constant.
Cari nilai bagi k jika $fg = gf$ di mana k adalah pemalar.

[2 marks]
[2 markah]

Answer/Jawapan :

2



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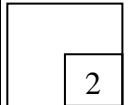
For
Examiner's
Use

3. Solve the quadratic equation $x(x-3)=5$.
Give your answer to three significant figure.
*Selesaikan persamaan kuadratik $x^2 - 3x - 5 = 0$
Beri jawapan anda betul kepada tiga angka bererti.*

[2 marks]
[2 markah]

Answer/Jawapan :

3



4. The area of each house flag is fixed as $(x+3)$ m length and $(x-2)$ m width. Given that the area of the flag is $f(x)$.
Luas bagi setiap bendera rumah sukan telah ditetapkan sebagai $(x+3)$ m panjang dan $(x-2)$ m lebar. Diberi luas bagi bendera itu sebagai $f(x)$.

- (a) State the area of the flag as quadratic function in general form.
Nyatakan luas bendera itu sebagai fungsi kuadratik bentuk am.
- (b) Find the range of x if the flag area is positive.
Cari julat bagi x jika luas bendera itu adalah positif.

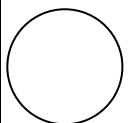
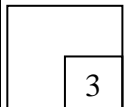
[3 marks]
[3 markah]

Answer/Jawapan

(a)

(b)

4



[Lihat halaman sebelah

For
Examiner's
Use

5. Given that α and 2α are the roots of a quadratic equation $2x^2 = 3x + p$.
Find the value of p , where p is a constant.

Diberi α dan 2α adalah punca-punca persamaan kuadratik $2x^2 = 3x + p$. Carikan nilai bagi p , di mana p adalah pemalar.

[3 marks]
[3 markah]

Answer/Jawapan :

5

3

6. Solve the equation
Selesaikan persamaan

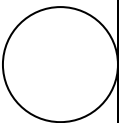
$$(0.01)^{x-2} = \left(\frac{1}{10}\right)^{x+1}$$

[3 marks]
[3 markah]

Answer/Jawapan :

6

3



SULIT

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For
Examiner's
Use

7. Express $\log_a \left(\frac{x}{y^2} \right)$ in terms of $\log_a x$ and $\log_a y$. Hence, find $\log_a y$ in terms of h if $\log_a \left(\frac{x}{y^2} \right) = 1$ and $\log_a x = h$.

Ungkapkan $\log_a \left(\frac{x}{y^2} \right)$ dalam sebutan $\log_a x$ dan $\log_a y$. Seterusnya, cari $\log_a y$ dalam sebutan h jika $\log_a \left(\frac{x}{y^2} \right) = 1$ dan $\log_a x = h$.

[3 marks]
[3 markah]

Answer/Jawapan :

7



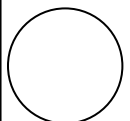
8. The first three terms of geometric progression is 5, 15, 45, Find the minimum number of term that the sum of term is more than 1200.

Tiga sebutan pertama bagi suatu jantang geometri ialah 5, 15, 45, Cari bilangan sebutan minimum supaya hasil tambah sebutan ini melebihi 1200.

[3 marks]
[3 markah]

Answer/Jawapan :

8



[Lihat halaman sebelah

9. A Star Bakery have sold 300 cakes on the first week . On the second week, the cakes sold have decrease by 7 cakes until 8th week. On the following week, the bakery do a sale and the sale increase by 100% then the week before.

Kedai kek Star Bakery telah berjaya menjual kek sebanyak 300 biji pada minggu pertama . Pada minggu kedua jualan telah merosot sebanyak 7 biji dan kemerosotan bilangan jualan adalah sama sehingga minggu kelapan. Pada minggu berikutnya, kedai itu telah mengadakan minggu jualan murah dan jualan bertambah sebanyak 100% dari jualan minggu sebelumnya.

Calculate the amount of cakes have been sold starting from the first week until the sale.

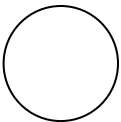
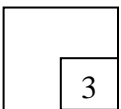
Hitungkan jumlah kek yang telah dijual bermula minggu pertama sehingga minggu jualan murah itu.

[3 marks]

[3 markah]

Answer/Jawapan :

9



10. Aminah was asked by her teacher to arrange the pieces of paper cut into right-angled triangles by the other students as seen in Diagram 10 .

Aminah diminta oleh gurunya supaya menyusun keratan-keratan kertas yang berbentuk segitiga tegak yang telah digunting oleh beberapa orang pelajar lain seperti Rajah 10 .

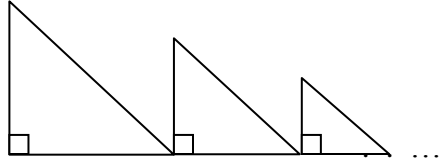


Diagram 10

Rajah 10

The area of the first triangle is 200 cm^2 where the length and width of the triangle is the same. For the next triangle, the length and width is $\frac{3}{4}$ from the length and width of the first triangle.

Luas segitiga pertama adalah 200 cm^2 di mana panjang dan lebar segitiga adalah sama. Bagi segitiga yang berikutnya, panjang dan lebar segitiga adalah $\frac{3}{4}$ daripada panjang dan lebar segitiga sebelumnya.

Find

Carikan

- (a) the width of the first triangle
lebar bagi segitiga yang pertama
- (b) area of 3rd triangle
luas bagi segitiga yang ketiga

[3 marks]

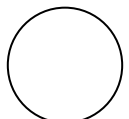
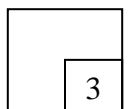
[3 markah]

Answer/Jawapan

(a)

(b)

10



For
Examiner's
Use

SULIT

11. Diagram 11(a) shows the straight line graph $\frac{y}{x} = 3 - 2x$ obtained from non-linear equation as shown in Diagram 11(b).

Rajah 11(a) menunjukkan graf garis lurus $\frac{y}{x} = 3 - 2x$ yang diperolehi daripada persamaan bukan linear seperti ditunjukkan dalam Rajah 11(b).

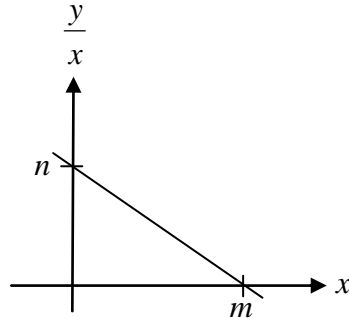


Diagram 11(a)
Rajah 11(a)

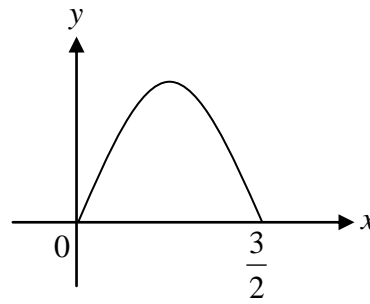


Diagram 11(b)
Rajah 11(b)

- (a) Find the value of m and of n .
Cari nilai m dan nilai n .
- (b) State that non linear equation.
Nyatakan persamaan tak linear itu.

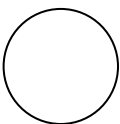
[3 marks]
[3 markah]

Answer/Jawapan

(a)

(b)

11



SULIT**3472/1**For
Examiner's
Use

12. Diagram 12 shows the straight line with equation $hx - \frac{y}{2} - 2 = 0$, where h is a constant.

Rajah 12 menunjukkan garis lurus dengan persamaan $hx - \frac{y}{2} - 2 = 0$, di mana h adalah pemalar.

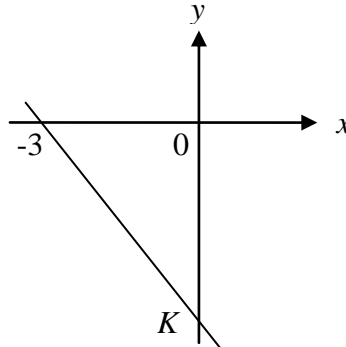


Diagram 12
Rajah 12

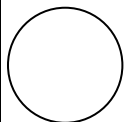
Find
Carikan

- (a) the value of h and the coordinates of K .
nilai h dan koordinat K .
- (b) the equation of straight line that perpendicular to the equation above and passes through the point $(4,3)$.
Cari persamaan garis lurus yang berserenjang dengan persamaan di atas dan melalui titik $(4,3)$.

[4 marks]
[4 markah]

Answer/Jawapan

- (a)
- (b)

12

[Lihat halaman sebelah

For
Examiner's
Use

SULIT

13. Given that the distance between point $A(2,5)$ and point $B(-2, t)$ is 5 unit

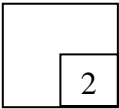
Diberi bahawa jarak di antara titik $A(2,5)$ dan titik $B(-2, t)$ ialah 5 unit.

Find the values of t .
Cari nilai-nilai bagi t .

[2 marks]
[2 markah]

Answer/Jawapan :

13



14. Given that $\sin \theta = \frac{p}{2}$ and $90^\circ \leq \theta \leq 180^\circ$, find ,in terms of p ,

Diberi $\sin \theta = \frac{p}{2}$ dan $90^\circ \leq \theta \leq 180^\circ$, cari, dalam sebutan p ,

- (a) cosec θ ,
kosek θ ,
(b) $\sin(90^\circ - \theta)$.

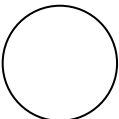
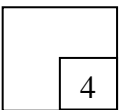
[4 marks]
[4 markah]

Answer/Jawapan :

(a)

(b)

14



15. Diagram 15 shows four points $O(0,0)$, $P(3,8)$, $Q(7,-2)$ and $R(-2, k)$.
Rajah 15 menunjukkan empat titik $O(0,0)$, $P(3,8)$, $Q(7,-2)$ dan $R(-2, k)$.

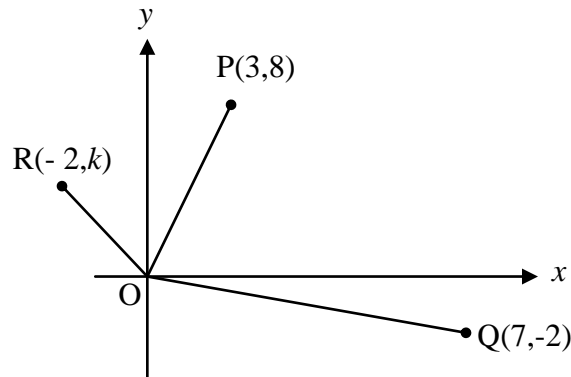


Diagram 15
Rajah 15

Given that \overline{OR} is parallel to \overline{QP} .

Diberi bahawa \overline{OR} adalah selari dengan \overline{QP} .

- (a) Express \overline{QP} in the form of $\begin{pmatrix} x \\ y \end{pmatrix}$

Ungkapkan \overline{QP} dalam bentuk $\begin{pmatrix} x \\ y \end{pmatrix}$

- (b) Find the value of k .

Cari nilai k .

[3 marks]

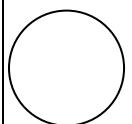
[3 markah]

Answer/Jawapan :

- (a)

- (b)

15



[Lihat halaman sebelah

SULIT

For
Examiner's
Use

16. Diagram 16 shows a parallelogram $PQRS$ with $\overrightarrow{PS} = -3\underline{x} + 4\underline{y}$ and $\overrightarrow{PQ} = 6\underline{x} + 2\underline{y}$.

Given that M is midpoint of QR .

Rajah 16 menunjukkan segiempat selari $PQRS$ dengan $\overrightarrow{PS} = -3\underline{x} + 4\underline{y}$ dan $\overrightarrow{PQ} = 6\underline{x} + 2\underline{y}$.

Diberi bahawa M ialah titik tengah bagi QR .

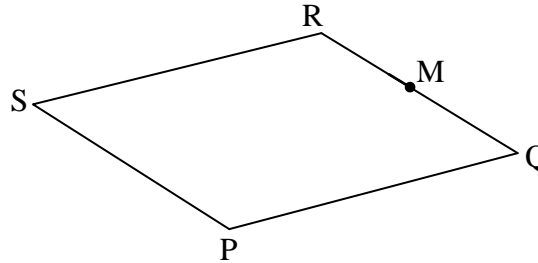


Diagram 16

Rajah 16

Find \overrightarrow{PM} in terms of \underline{x} and \underline{y} .

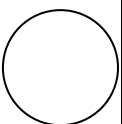
Cari \overrightarrow{PM} dalam sebutan \underline{x} dan \underline{y} .

[3 marks]

[3 markah]

Answer/Jawapan :

16



SULIT**3472/1***For
Examiner's
Use*

17. The equation of a curve is given by $y = x^2 + (3x - 1)^2$.
Persamaan bagi satu lengkung diberi oleh $y = x^2 + (3x - 1)^2$.

Calculate

Hitung

- (a) the value of
- x
- when
- y
- is minimum.

nilai x apabila y adalah minimum.

- (b) the minimum value of
- y
- .

nilai minimum bagi y .

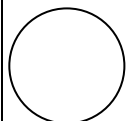
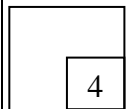
[4 marks]

[4 markah]

Answer/Jawapan :

(a)

(b)

17

[Lihat halaman sebelah

SULIT

For
Examiner's
Use

18. It is given that $V = 6x^2 + x - 4$.

Diberi bahawa $V = 6x^2 + x - 4$.

Find,

Cari,

(a) the value of $\frac{dV}{dx}$ when $x = 1$.

nilai bagi $\frac{dV}{dx}$ apabila $x = 1$.

(b) the approximate changes of V in terms of k , when x changes from 1 to $1+k$, where k is small value.

perubahan kecil bagi V dalam sebutan k , apabila x berubah daripada 1 kepada $1+k$, di mana k adalah nilai kecil.

[4 marks]

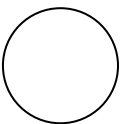
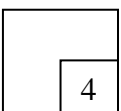
[4 markah]

Answer/Jawapan :

(a)

(b)

18



SULIT

3472/1

For
Examiner's
Use

19. Diagram 19 shows a curve $y = g(x)$.

Rajah 19 menunjukkan lengkung $y = g(x)$.

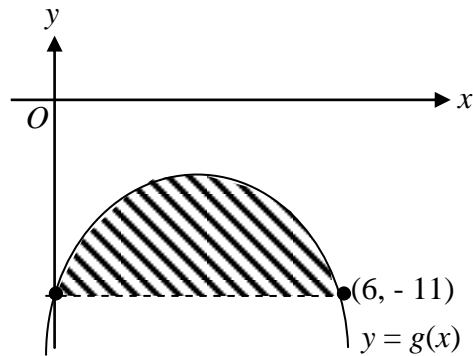


Diagram 19
Rajah 19

Given that the area of shaded region is 36 unit^2 .

Diberi bahawa luas kawasan berlorek ialah 36 unit^2 .

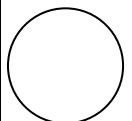
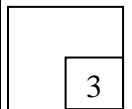
Find the value of $\int_0^6 g(x) dx$.

Cari nilai bagi $\int_0^6 g(x) dx$.

[3 marks]
[3 markah]

Answer/Jawapan :

19



[Lihat halaman sebelah

SULIT

20. Diagram 20 shows a sector AOB with centre O.

Rajah 20 menunjukkan suatu sektor AOB dengan pusat O.

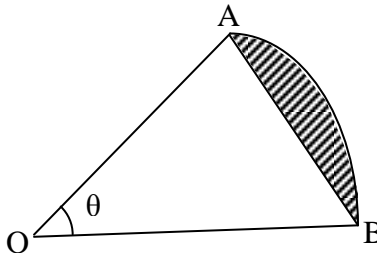


Diagram 20
Rajah 20

Given that the length of arc AB is 9.54 cm and the perimeter of sector AOB is 30 cm.

Diberi bahawa panjang lengkok AB ialah 9.54 cm dan perimeter sector AOB ialah 30 cm.

Find

Cari

(a) the value of θ , in radian.

nilai bagi θ , dalam radian.

(b) the area of shaded region.

luas bagi kawasan berlorek.

[4 marks]

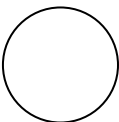
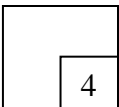
[4 markah]

Answer/Jawapan :

(a)

(b)

20



SULIT**3472/1***For
Examiner's
Use*

21. A set of numbers 2, 3, $2k$, $k + 6$, 10 and 12 which is arranged in ascending order has a mean of p .

Satu set nombor 2, 3, $2k$, $k + 6$, 10 dan 12 yang diatur dalam tertib menaik mempunyai min p .

- (a) Express k in terms of p .

Ungkapkan k dalam sebutan p .

- (b) Find the median of the numbers in terms of k .

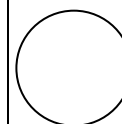
Cari median bagi set nombor itu dalam sebutan k .

[4 marks]
[4 markah]

Answer/Jawapan :

(a)

(b)

21

[Lihat halaman sebelah

SULIT

For
Examiner's
Use

22. Diagram 22 shows a histogram for the distribution of marks obtained by 30 students in Mathematics test.

Rajah 22 menunjukkan sebuah histogram bagi taburan markah yang diperolehi oleh 30 orang pelajar dalam satu ujian Matematik.

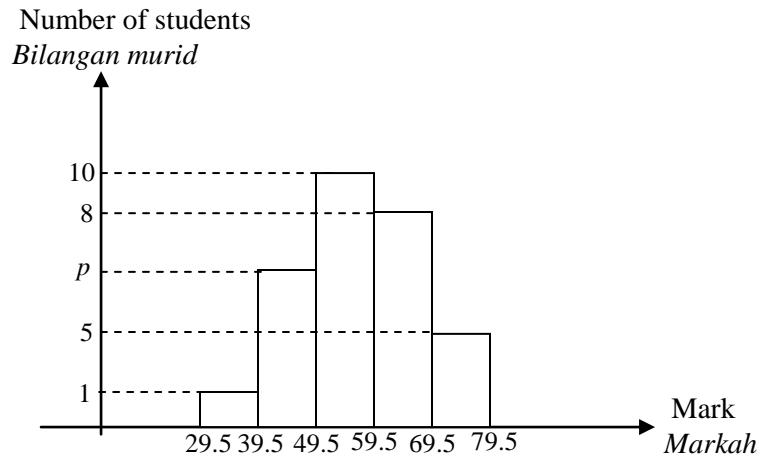


Diagram 22
Rajah 22

- (a) Find the value of p .

Cari nilai bagi p .

- (b) Calculate the mean marks obtained by the students.

Hitung markah min yang diperolehi oleh pelajar-pelajar tersebut.

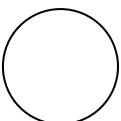
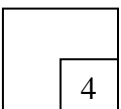
[4 marks]
[4 markah]

Answer/Jawapan :

(a)

(b)

22



23. Shireen has 5 reference books and 6 story books. She decided to donate 5 books to her school library.

Shireen mempunyai 5 buah buku rujukan dan 6 buah buku cerita. Dia bercadang untuk menderma 5 buah buku kepada perpustakaan sekolahnya.

Find the number of ways of selection if

Cari bilangan cara pilihan boleh dibuat jika

- (a) there is no restriction

tiada kekangan dikenakan

- (b) there are at least 3 story books to be selected.

sekurang-kurangnya 3 buah buku cerita mesti dipilih.

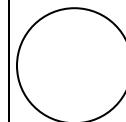
[4 marks]
[4 markah]

Answer/Jawapan :

(a)

(b)

23



[Lihat halaman sebelah

SULIT

24. Table 24 shows the number of coloured cards in a bag.

Jadual 24 menunjukkan bilangan kad berwarna dalam sebuah beg.

Colour / Warna	Number of cards <i>Bilangan kad</i>
Blue / <i>Biru</i>	4
Black / <i>Hitam</i>	h
Red / <i>Merah</i>	$h - 3$

Table 24

Jadual 24

A card is picked at random from the bag. Given that the probability of getting a blue card is same as the probability of getting a red card.

Satu kad diambil secara rawak daripada beg itu. Diberi bahawa kebarangkalian untuk memperolehi satu kad biru adalah sama dengan kebarangkalian untuk memperolehi satu kad merah.

Find

Cari

- (a) the value of h .
nilai h .
- (b) the probability of getting a black card.
kebarangkalian untuk memperolehi kad hitam.

[3 marks]

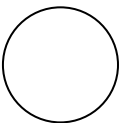
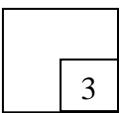
[3 markah]

Answer/Jawapan :

(a)

(b)

24



SULIT

3472/1

For
Examiner's
Use

25. Diagram 25 shows the standard normal distribution curve.
Rajah 25 menunjukkan graf taburan normal piawai.

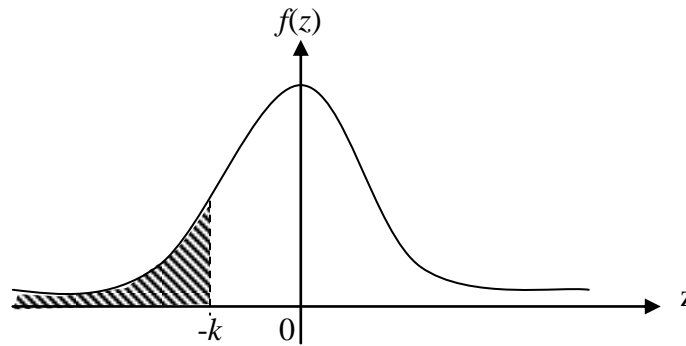


Diagram 25
Rajah 25

- (a) Given that the area of shaded region is 0.1766.
Diberi bahawa luas kawasan berlorek ialah 0.1766.
- Find $P(-k < z < k)$.
Cari $P(-k < z < k)$.
- (b) X is a continuous random variable which is normally distributed with mean of 35 kg and standard deviation of 1.4 kg , where the z value is k .
 X ialah pemboleh ubah rawak selanjar yang tertabur secara normal dengan min 35 kg dan sisihan piawai 1.4 kg, di mana nilai z ialah k .
- Find the value of X .
Cari nilai X .

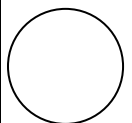
[4 marks]
[4 markah]

Answer/Jawapan :

(a)

(b)

25



END OF QUESTION PAPER
KERTAS SOALAN TAMAT

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. Ini boleh membantu anda untuk mendapatkan markah.
5. If you wish to change your answer, cross out the answer 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 5.
Satu senarai rumus disediakan di halaman 2 hingga 5.
9. A booklet of four-figure mathematical tables is provided.
Sebuah 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.

3472/1

Matematik
Tambahan
Kertas 1
2 jam
Ogos 2015

JABATAN PELAJARAN NEGERI KELANTAN

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA 2015


ADDITIONAL MATHEMATICS

Paper 1

MARKING SCHEME

Skema Pemarkahan ini mengandungi **6** halaman bercetak

PERATURAN PEMARKAHAN- KERTAS 1

No.	Solution and Mark Scheme	Sub Marks	Total Marks
1	(a) $m = -3$ (b) $\{-1, 0, 3, 5\}$	1 1	2
2	$k = 7$ $3(kx - 6) - 2 = k(3x - 2) - 6$ @ setara	2 B1	2
3	4.19, -1.19 (Both) $x^2 - 3x + \left(-\frac{3}{2}\right)^2 = 5 + \left(-\frac{3}{2}\right)^2$ @ setara	2 B1	2
4	(a) $f(x) = x^2 + x - 6$ (b) $x < -3, x > 2$ 	1 2 B1	3
5	$p = 1$ $2\left(\frac{1}{2}\right)^2 = \frac{p}{2}$ $\alpha + 2\alpha = \frac{3}{2}$ @ $\alpha(2\alpha) = \frac{p}{2}$ @ $\alpha = \frac{1}{2}$	3 B2 B1	3
6	$x = 5$ $-2x + 4 = -x - 1$ @ setara 10^{-2} @ 10^{-1}	3 B2 B1	3
7	$\log_a y = \frac{h-1}{2}$ $h - 2\log_a y = 1$ $\log_a x - \log_a y^2$	3 B2 B1	3

8	$n = 6$ $3^n = 481$ $\frac{5(3^n - 1)}{3 - 1} > 1200$	3 B2 B1	3
9	2706 2204 + 502 @ setara 2204 @ 251 @ 502 @ setara	3 B2 B1	3
10	(a) 20 (b) 63.281 $\frac{45}{4} @ 200 \left(\frac{9}{16} \right)^2 @ setara$	1 2 B1	3
11	(a) $m = \frac{3}{2}, n = 3$ (b) $y = 3x - 2x^2$	1, 1 1	3
12	(a) $h = -\frac{2}{3}, K = (0, -4)$ (b) $y = \frac{3}{4}x + 6$ $m = \frac{3}{4} @ setara$	1, 1 2 B1	4
13	$t = 8, 2$ $\sqrt{(2+2)^2 + (5-t)^2} = 5$	2 B1	2
14	(a) $\frac{2}{p}$ (b) $-\frac{\sqrt{4-p^2}}{2}$	1 3	4

	$(1)\left(-\frac{\sqrt{4-p^2}}{2}\right) - (0)\left(\frac{p}{2}\right)$ $\sin 90^\circ \cos \theta - \cos 90^\circ \sin \theta$	B2	
		B1	
15	<p>(a) $\begin{pmatrix} -4 \\ 10 \end{pmatrix}$</p> <p>(b) $k = 5$</p> $\frac{k}{10} = \frac{-2}{-4} \text{ @ setara}$	1	3
		2	
		B1	
16	$\frac{9}{2}\underline{x} + 4\underline{y}$ $6\underline{x} + 2\underline{y} + \frac{-3\underline{x} + 4\underline{y}}{2}$ $\overrightarrow{PM} = \overrightarrow{PQ} + \overrightarrow{QM} \text{ or } \overrightarrow{QM} = \frac{1}{2}\overrightarrow{QR}$	3	3
		B2	
		B1	
17	<p>(a) $\frac{3}{10}$</p> $\frac{dy}{dx} = 20x - 6$ <p>(b) $\frac{1}{10}$</p> $y = 10\left(\frac{3}{10}\right)^2 - 6\left(\frac{3}{10}\right) + 1$	2	4
		B1	
		2	
		B1	
18	<p>(a) 13</p> $\frac{dV}{dx} = 12x + 1$	2	4
		B1	

	(b) $13k$ $\delta x = k$	2 B1	
19	-30 $\int_0^6 g(x)dx = -66 - (-36)$ Luas $\square - \int_0^6 g(x)dx = 36$	3 B2 B1	3
20	(a) $\theta = 0.9326 \text{ rad}$ $r = 10.23$ (b) 6.773 $\frac{1}{2}(10.23)^2(0.9326 - \sin 0.9326)$	2 B1 2 B1	4
21	(a) $k = 2p - 11$ $\frac{2+3+2k+k+6+10+12}{6} = p$ (b) $\frac{3k+6}{2}$ $\frac{2k+k+6}{2}$	2 B1 2 B1	4
22	(a) $p = 6$ $10+8+p+5+1=30$ (b) 57.83 $\frac{34.5(1)+44.5(6)+54.5(10)+64.5(8)+74.5(5)}{30}$	2 B1 2 B1	4
23	(a) 462 (b) 281 ${}^6C_3 \times {}^5C_2 + {}^6C_4 \times {}^5C_1 + {}^6C_5 \times {}^5C_0$ ${}^6C_3 \times {}^5C_2$ atau ${}^6C_4 \times {}^5C_1$ atau ${}^6C_5 \times {}^5C_0$	1 3 B2 B1	4

24	(a) $h=7$ $\frac{4}{4+h+h-3} = \frac{h-3}{4+h+h-3}$ (b) $\frac{7}{15}$	2 B1 1	3
25	(a) 0.6468 $1-2(0.1766)$ (b) 36.30 $\frac{X-35}{1.4} = 0.929$	2 B1 2 B1	4