



**MAJLIS PENGETUA-PENGETUA SEKOLAH MALAYSIA
(CAWANGAN PULAU PINANG)**

SULIT

3472/1

MODUL BERFOKUS KBAT SPM

ANJURAN MPSM CAWANGAN PULAU
PINANG

DENGAN KERJASAMA

SEKTOR PENGURUSAN AKADEMIK
JABATAN PENDIDIKAN PULAU
PINANG

**ADDITIONAL MATHEMATICS 1
3472/1**

1. *Tulis nama dan angka giliran anda pada ruang yang disediakan.*
2. *Kertas peperiksaan 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 peperiksaan ini.*

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

NAMA:.....

ANGKA GILIRAN:

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BUKU SOALAN INI MENGANDUNGI 27 MUKA SURAT TERMASUK KULIT

[Lihat halaman sebelah

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

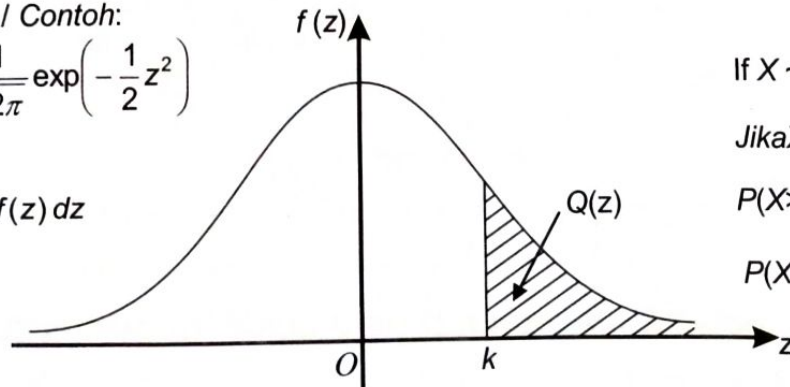
z										Minus / Tolak									
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	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

Example / Contoh:

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

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

0.0179



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5 Volume of revolution

Isi padu kisanan

$$= \int_a^b \pi y^2 \, dx \text{ or (atau)}$$

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

[Lihat halaman sebelah

**STATISTICS
STATISTIK**

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

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

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

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

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

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

$$7 \quad \bar{i} = \frac{\sum W_i I_i}{\sum W_i}$$

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

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

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

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

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

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

$$14 \quad Z = \frac{X - \mu}{\sigma}$$

**GEOMETRY
GEOMETRI**

1 Distance / Jarak

$$= \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

2 Midpoint / Titik tengah

$$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

3 A point dividing a segment of a line

Titik yang membahagi suatu tembereng garis

$$(x, y) = \left(\frac{nx_1 + mx_2}{m+n}, \frac{ny_1 + my_2}{m+n} \right)$$

4 Area of triangle / Luas segi tiga

$$= \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

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

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

TRIGONOMETRY
TRIGONOMETRI

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

Answer *all* questions
Jawab *semua* soalan

- 1 The relation between set $P = \{-3, -2, -1, 1, 2, 3\}$ and set $Q = \{1, 4, 3r\}$ is defined by the following set of ordered pairs :

$$\{(-3, 3r), (-2, 4), (-1, 1), (1, 1), (2, 4), (3, 3r)\}$$

Hubungan antara set $P = \{-3, -2, -1, 1, 2, 3\}$ dan set $Q = \{1, 4, 3r\}$ ditakrifkan oleh set pasangan tertib berikut :

$$\{(-3, 3r), (-2, 4), (-1, 1), (1, 1), (2, 4), (3, 3r)\}$$

State
Nyatakan

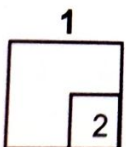
- (a) the value of r ,
nilai r ,
- (b) the type of relation.
jenis hubungan itu.

[2 marks]
[2 markah]

Answer / Jawapan:

(a)

(b)



- 2 Diagram 2 shows the graph of $f(x) = 2 + |3x - 4|$ for the domain $0 \leq x \leq 4$.
 Rajah 2 menunjukkan graf bagi $f(x) = 2 + |3x - 4|$ untuk domain $0 \leq x \leq 4$.

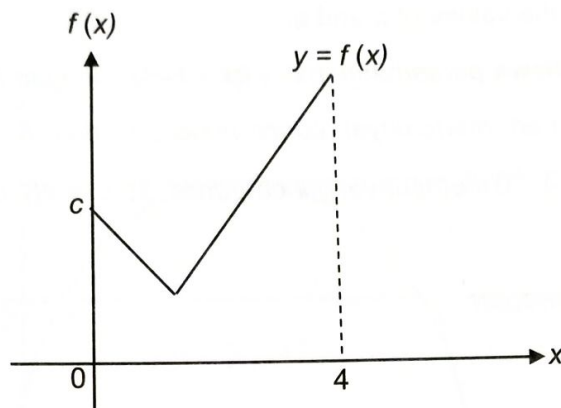


Diagram 2
Rajah 2

State
Nyatakan

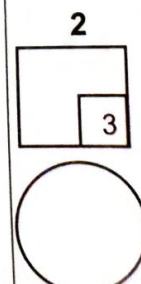
- (a) the value of c ,
nilai c ,
- (b) the range of $f(x)$ corresponding to the given domain.
julat $f(x)$ yang sepadan dengan domain yang diberikan.

[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)



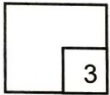
- 3 Given that the equation $px^2 + qx + 1 = 0$, where p and q are constants and have roots, α and β while the equation $x^2 + 2x + 4 = 0$ have roots, 2α and 2β . Find the values of p and q .

Diberi bahawa persamaan $px^2 + qx + 1 = 0$, dengan keadaan p dan q ialah pemalar dan mempunyai punca-punca, α dan β manakala persamaan $x^2 + 2x + 4 = 0$ mempunyai punca-punca, 2α dan 2β . Cari nilai p dan q .

[3 marks]
[3 markah]

Answer / Jawapan:

3

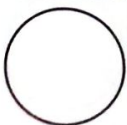
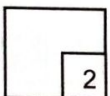


- 4 Find the range of values of values of x for $2x^2 + 5x \leq 3$.
Cari julat nilai x bagi $2x^2 + 5x \leq 3$.

[2 marks]
2 markah]

Answer / Jawapan:

4



- 5 Diagram 5 shows the graph of a quadratic function $y = f(x)$. The line $y = 4$ is a tangent to the graph.

Rajah 5 menunjukkan graf bagi fungsi kuadratik $y = f(x)$. Garis $y = 4$ ialah tangen kepada graf itu.

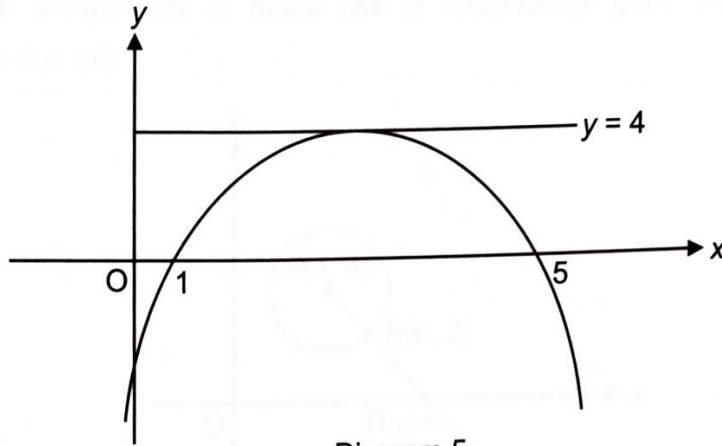


Diagram 5
Rajah 5

- (a) Write the equation of the axis of symmetry of the curve.
Tulis persamaan paksi simetri bagi lengkung itu.
- (b) Express $f(x)$ in the form of $p - (x + q)^2$, where p and q are constants.
Ungkapkan $f(x)$ dalam bentuk $p - (x + q)^2$, dengan keadaan p dan q ialah pemalar.

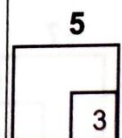
[3 marks]

[3 markah]

Answer / Jawapan:

(a)

(b)



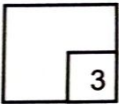
- 6 Given $2^{x+2} \cdot 3^{x-2} \cdot 5^2 = 6^{3x}$, find the value of 6^x .
 Diberi $2^{x+2} \cdot 3^{x-2} \cdot 5^2 = 6^{3x}$, cari nilai bagi 6^x .

[3 marks]
 [3 markah]

Answer / Jawapan:



6

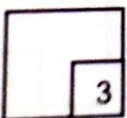


- 7 Given $2\log_3 m^2 - 3\log_3 n - \log_9 p^8 + \log_3 q = 3$, express q in terms of m , n and p .
 Diberi $2\log_3 m^2 - 3\log_3 n - \log_9 p^8 + \log_3 q = 3$, ungkapkan q dalam sebutan m, n dan p .

[3 marks]
 [3 markah]

Answer / Jawapan:

7



- 8 Diagram 8 shows a circle with centre $P(4, 4)$. A rope is marked at P and Q where R divides the line segment PQ in the ratio $PR = 0.4 RQ$.

Rajah 8 menunjukkan sebuah bulatan dengan pusat $P(4, 4)$. Titik P dan Q diikat dengan tali di mana titik R membahagi garis PQ dalam nisbah $PR = 0.4 RQ$.

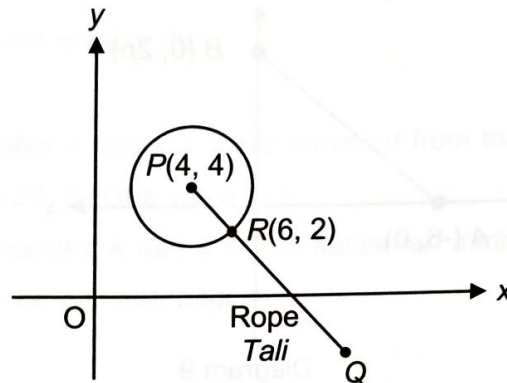


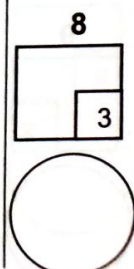
Diagram 8
Rajah 8

Find the radius of the new circle PQ .

Cari jejari bulatan PQ yang baru.

[3 marks]
[3 markah]

Answer / Jawapan:



- 9 Diagram 9 shows a straight line AB with the equation $\frac{x}{3q} + \frac{y}{10} = 1$.
 Rajah 9 menunjukkan garis lurus AB yang mempunyai persamaan $\frac{x}{3q} + \frac{y}{10} = 1$.

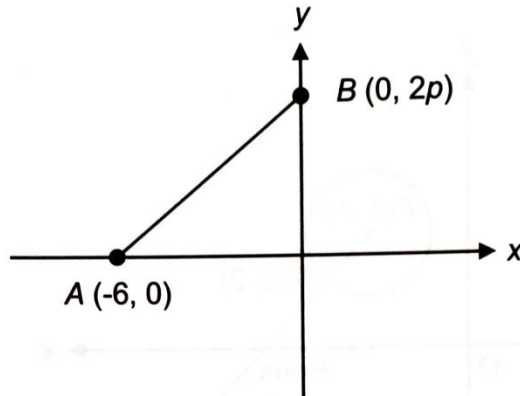


Diagram 9
Rajah 9

Determine the value of
Tentukan nilai

- (a) p ,
 (b) q .

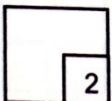
Answer / Jawapan:

(a)

(b)

[2 marks]
[2 markah]

9



10 The mean of a set of twenty five number is 24.
Min bagi suatu set dua puluh lima nombor ialah 24.

(a) If each of the number increase by 3 and multiplied 2, find the new mean of the set.

Jika setiap nombor bertambah sebanyak 3 dan didarab 2. Cari min baru bagi set nombor itu.

(b) If two number k and $k + 2$ are removed from the set, the mean of the new set is 22, find the value of k .

Jika dua nombor k dan $k + 2$ di dikeluarkan daripada set, min bagi set baru ialah 22, cari nilai bagi k .

[4 marks]

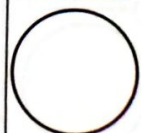
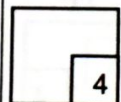
[4 markah]

Answer / Jawapan:

(a)

(b)

10



- 11 Table 11 shows the mass of each member in Rahim's family.
Jadual 11 menunjukkan jisim bagi setiap ahli dalam keluarga Rahim.

Nama Nama	Rahim	Suzy	Naqib	Anis	Zali
Mass (kg) Jisim (kg)	54.5	69.1	25.4	18.2	7.5

Table 11
Jadual 11

Rahim calculated the variance and found it to be -406.4036 kg^2 . Since variance should be positive, Rahim suspected that he forget to square one of the data while calculating the sum of squares of the masses.

Nilai varians yang dihitung oleh Rahim ialah -406.4036 kg^2 . Oleh sebab varians mesti bernilai positif, Rahim menjangkakan bahawa dia terlupa untuk mengkuasadukan salah satu data semasa mengira hasil tambah kuasa dua bagi jisim-jisim itu.

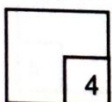
Given that other calculation in obtaining the variance were correct, find whose mass was not squared by Rahim. Show your working clearly.

Diberi bahawa pengiraan lain dalam mendapatkan varians itu adalah betul, cari jisim individu yang tidak dikuasa duakan oleh Rahim. Tunjukkan jalan kerja anda dengan jelas.

[4 marks]
 [4 markah]

Answer / Jawapan:

11



- 12 Diagram 12 shows a sector ORT with radius 20 cm at centre O and a sector SRT with radius r cm at centre S . The subtended angle of arc RT at a centre S is $\frac{7}{3}$ radians.

Rajah 12 menunjukkan sektor bulatan ORT dengan jejari 20 cm berpusat O dan sektor bulatan SRT dengan jejari r cm berpusat S . Sudut yang mencangkum lengkok RT pada pusat bulatan S ialah $\frac{7}{3}$ radian.

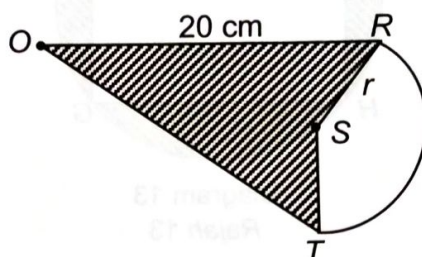


Diagram 12
Rajah 12

Given that the length of arc RT is 21 cm, calculate
Diberi bahawa panjang lengkok RT ialah 21 cm, hitung

- (a) the value of r ,
nilai r ,
- (b) the value of $\angle ROT$, in radian if the area of the shaded region is 60 cm^2 .
nilai $\angle ROT$, dalam radian jika luas kawasan berlorek ialah 60 cm^2 .

[4 marks]

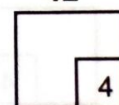
[4 markah]

Answer / Jawapan:

(a)

(b)

12



- 13 Diagram 13 shows a rectangle $EFGH$ inscribed in a circle.
Rajah 13 menunjukkan sebuah segiempat tepat $EFGH$ yang terterap dalam sebuah bulatan.

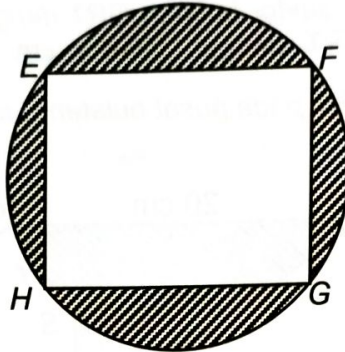


Diagram 13
Rajah 13

Given $EF = 6$ cm and $FG = x$ cm. Find
Diberi $EF = 6$ cm dan $FG = x$ cm. Cari

- (a) the area of the shaded region, A , in term of x and π .
luas kawasan berlorek, A , dalam sebutan x dan π .
- (b) the value of x , when the shaded area is minimum.
nilai x , supaya luas rantau berlorek adalah minimum.

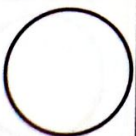
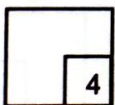
[4 marks]
 [4 markah]

Answer / Jawapan:

(a)

(b)

13



14 Given $y = \frac{3x+1}{x^2-3}$, find $\frac{dy}{dx}$.

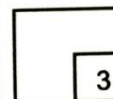
Diberi $y = \frac{3x+1}{x^2-3}$, cari $\frac{dy}{dx}$.

[3 marks]

[3 markah]

Answer / Jawapan:

14



15 Sum of the first n term for arithmetic progression is $S_n = \frac{n}{2}(4n+5)$. Find the sixth term.

Hasil tambah n sebutan pertama bagi suatu jangjang aritmetik ialah

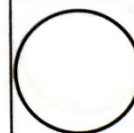
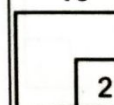
$S_n = \frac{n}{2}(4n+5)$. Cari sebutan keenam.

[2 marks]

[2 markah]

Answer / Jawapan:

15



- 16 The height of a plant increases by 7% every month. Given that the height of the plant was initially h cm. After n months, the height of the plant exceeds 3 times its height. What is the minimum value for n ?

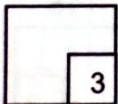
Tinggi sejenis tumbuhan bertambah 7% setiap bulan. Diberi bahawa tinggi tumbuhan itu pada awalnya ialah h cm. Selepas n bulan, tinggi tumbuhan itu melebihi 3 kali ganda daripada tinggi awalnya. Apakah nilai minimum bagi n ?

[3 marks]

[3 markah]

Answer / Jawapan:

16



- 17 Diagram 17 shows a straight line graph obtain by plotting $\log_3 y$ against $\log_3 x$.

Rajah 17 di atas menunjukkan graf garis lurus yang diperolehi dengan memplotkan $\log_3 y$ melawan $\log_3 x$.

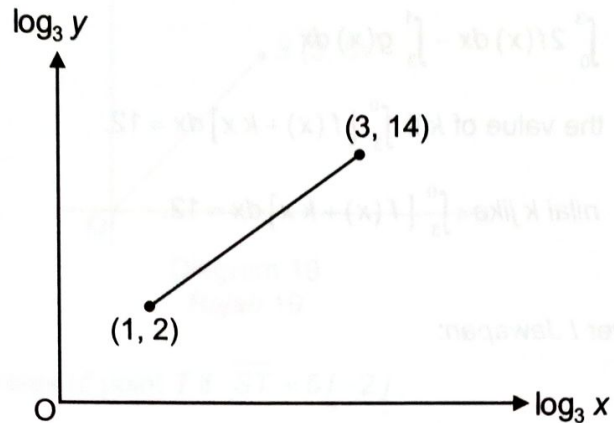


Diagram 17
Rajah 17

The variables x and y are related by $y = \frac{x^{3n}}{k}$, where n and k are constant.
Find value of n and k .

Nilai x dan y dihubungkan oleh persamaan $y = \frac{x^{3n}}{k}$, dengan n dan k adalah pemalar. Cari nilai n dan k .

[3 marks]
[3 markah]

Answer / Jawapan:



18 Given $\int_0^3 f(x) dx = 6$ and $\int_1^3 g(x) dx = 4$, find

Diberi $\int_0^3 f(x) dx = 6$ dan $\int_1^3 g(x) dx = 4$, cari

(a) $\int_0^3 2f(x) dx - \int_3^1 g(x) dx$,

(b) the value of k if $\int_3^0 [f(x) + kx] dx = 12$.

nilai k jika $\int_3^0 [f(x) + kx] dx = 12$.

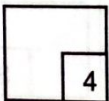
[4 marks]
[4 markah]

Answer / Jawapan:

(a)

(b)

18



- 19 Diagram 19 shows a point $S(3, 5)$ on a Cartesian plane.
Rajah 19 menunjukkan titik $S(3, 5)$ pada satu satah cartes.

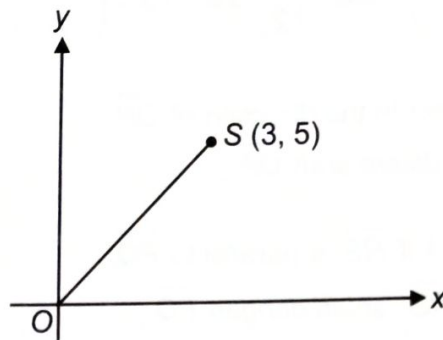


Diagram 19
Rajah 19

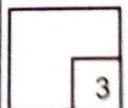
Find the coordinates of point T if $\vec{ST} = 5\vec{i} - 2\vec{j}$.

Cari koordinat titik T jika $\vec{ST} = 5\vec{i} - 2\vec{j}$.

[3 marks]
[3 markah]

Answer / *Jawapan*:

19



- 20 Given that $\overrightarrow{PQ} = \begin{pmatrix} -3 \\ 5 \end{pmatrix}$, $\overrightarrow{OQ} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ and $\overrightarrow{RS} = \begin{pmatrix} k-2 \\ k \end{pmatrix}$. Find
 Diberi $\overrightarrow{PQ} = \begin{pmatrix} -3 \\ 5 \end{pmatrix}$, $\overrightarrow{OQ} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ dan $\overrightarrow{RS} = \begin{pmatrix} k-2 \\ k \end{pmatrix}$. Cari

- (a) the unit vector in the direction of \overrightarrow{OP} ,
 vektor unit dalam arah \overrightarrow{OP} ,
- (b) the value of k if \overrightarrow{RS} is parallel to \overrightarrow{PQ} .
 nilai k jika \overrightarrow{RS} selari dengan \overrightarrow{PQ} .

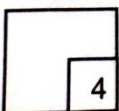
[4 marks]
 [4 markah]

Answer / Jawapan:

(a)

(b)

20



- 21 It is given that $\cos \theta = -p$ and θ is an reflex angle.
 Diberi bahawa $\cos \theta = -p$ dan θ ialah sudut refleks.

Find in terms of p
 Cari dalam sebutan p

- (a) $\cos 2\theta$,
 $\cos 2\theta$,
 (b) $\tan \theta$.

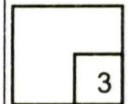
[3 marks]
 [3 markah]

Answer / Jawapan:

(a)

(b)

21

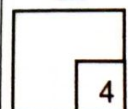


- 22 Solve the equation ${}^6C_r = 5 \times {}^4C_r$.
 Selesaikan persamaan ${}^6C_r = 5 \times {}^4C_r$.

[4 marks]
 [4 markah]

Answer / Jawapan:

22



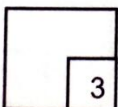
- 23 A box contains 10 red cards and x blue cards. If a card is picked randomly from the box, the probability of getting a blue card is $\frac{3}{8}$. Find the value of x .

Sebuah kotak berisi 10 keping kad merah dan x keping kad biru. Jika sekeping kad dipilih secara rawak dari kotak itu, kebarangkalian mendapat kad biru ialah $\frac{3}{8}$. Cari nilai x .

[3 marks]
[3 markah]

Answer / Jawapan:

23



- 24 Diagram 24 shows a standard normal distribution graph.
Rajah 24 menunjukkan graf taburan normal piawai.

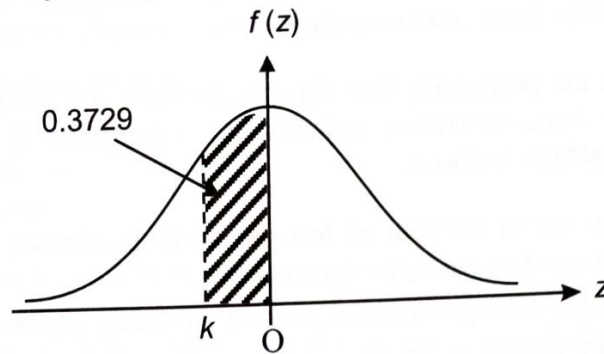


Diagram 24
Rajah 24

The probability represented by the area of the shaded region is 0.3729.
Kebarangkalian yang diwakili oleh kawasan berlorek ialah 0.3729.

- (a) Find the value of k ,
Cari nilai k ,
- (b) X is a continuous random variable which has a normal distribution with a mean of 38 and a standard deviation of 7.
 X ialah satu pemboleh ubah rawak selanjar yang bertabur secara normal dengan min 38 dan sisihan piawai 7.

Find the value of X when z -score is k .
Cari nilai X apabila skor- z ialah k .

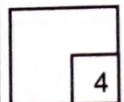
[4 marks]
[4 markah]

Answer / Jawapan:

(a)

(b)

24



- 25 65% of the students in a class are female. 10 students are chosen at random from the class.
65% pelajar di dalam sebuah kelas ialah perempuan. 10 orang murid dipilih secara rawak daripada kelas itu.
- (a) Find the probability that more than 2 of them are female.
Cari kebarangkalian bahawa lebih daripada 2 orang pelajar ialah pelajar perempuan.
- (b) If the mean number of female students chosen is 26, find the total number of students in the class.
Jika min bilangan pelajar perempuan yang dipilih ialah 26, cari jumlah pelajar dalam kelas itu.

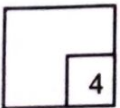
[4 marks]
[4 markah]

Answer / Jawapan:

(a)

(b)

25



END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT