

NO. KAD PENGENALAN

ANGKA GILIRAN

Nama Tingkatan



JABATAN PELAJARAN NEGERI SELANGOR
MAJLIS PENGETUA SEKOLAH MALAYSIA NEGERI SELANGOR



PROGRAM PENINGKATAN PRESTASI AKADEMIK
PEPERIKSAAN PERCUBAAN

SIJIL PELAJARAN MALAYSIA 2011

3472/1

ADDITIONAL MATHEMATICS

Kertas 1

September

2 jam

Dua jam

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DIBERITAHU**

- Tulis nombor kad pengenalan, angka giliran, nama dan tingkatan anda pada petak yang disediakan.*
- Kertas soalan ini adalah dalam dwibahasa.*
- Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
- Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
- Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Untuk Kegunaan Pemeriksa		
Kod Pemeriksa :		
Soalan	Markah Penuh	Markah Diperoleh
1	2	
2	4	
3	3	
4	3	
5	2	
6	3	
7	3	
8	3	
9	3	
10	2	
11	4	
12	4	
13	4	
14	4	
15	2	
16	3	
17	3	
18	3	
19	4	
20	3	
21	2	
22	4	
23	4	
24	4	
25	4	
Jumlah	80	

Kertas soalan ini mengandungi 24 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 / ALGEBRA

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS / KALKULUS

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

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

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

$$4 \quad \text{Area under a curve} \\ \text{Luas di bawah lengkung}$$

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

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

$$5 \quad \text{Volume of revolution / Isi padu kisanan}$$

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

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

GEOMETRY / GEOMETRI

$$1 \quad \text{Distance / Jarak}$$

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

$$2 \quad \text{Midpoint / Titik tengah}$$

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

$$3 \quad \text{A point dividing a segment of a line}$$

Titik yang membahagi suatu tembereng garis

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

$$4 \quad \text{Area of triangle / Luas segi tiga}$$

$$= \frac{1}{2} |(x_1y_2 + x_2y_3 + x_3y_1) - (x_2y_1 + x_3y_2 + x_1y_3)|$$

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

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

STATISTICS / STATISTIK

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

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

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

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

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

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

7
$$\bar{I} = \frac{\sum W_i I_i}{\sum W_i}$$

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

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

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

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

12 Mean / Min, $\mu = np$

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

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

TRIGONOMETRY / TRIGONOMETRI

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

2 Area of sector, $A = \frac{1}{2}r^2\theta$
Luas sektor, $L = \frac{1}{2}j^2\theta$

3 $\sin^2 A + \cos^2 A = 1$
 $\sin^2 A + \cos^2 A = 1$

4 $\sec^2 A = 1 + \tan^2 A$
 $\sec^2 A = 1 + \tan^2 A$

5 $\operatorname{cosec}^2 A = 1 + \cot^2 A$
 $\operatorname{kosec}^2 A = 1 + \cot^2 A$

6 $\sin 2A = 2 \sin A \cos A$
 $\sin 2A = 2 \sin A \cos A$

7 $\cos 2A = \cos^2 A - \sin^2 A$
 $= 2 \cos^2 A - 1$
 $= 1 - 2 \sin^2 A$
 $\cos 2A = \cos^2 A - \sin^2 A$
 $= 2 \cos^2 A - 1$
 $= 1 - 2 \sin^2 A$

8 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$

9 $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$
 $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

10
$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

11
$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

12
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

13 $a^2 = b^2 + c^2 - 2bc \cos A$
 $a^2 = b^2 + c^2 - 2bc \cos A$

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

**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	14	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	18	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	8	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
3.1	0.000968	0.000935	0.000904								3	6	9	13	16	19	22	25	28
				0.000874	0.000845	0.000816	0.000789				3	6	8	11	14	17	20	22	25
								0.000762	0.000736	0.000711	2	5	7	10	12	15	17	20	22
3.2	0.000687	0.000664	0.000641	0.000619	0.000598						2	4	7	9	11	13	15	18	20
						0.000577	0.000557	0.000538	0.000519	0.000501	2	4	6	8	9	11	13	15	17
3.3	0.000483	0.000466	0.000450	0.000434	0.000419						2	3	5	6	8	10	11	13	14
						0.000404	0.000390	0.000376	0.000362	0.000349	1	3	4	5	7	8	9	10	12
3.4	0.000337	0.000325	0.000313	0.000302	0.000291	0.000280	0.000270	0.000260	0.000251	0.000242	1	2	3	4	5	6	7	8	9
3.5	0.000233	0.000224	0.000216	0.000208	0.000200	0.000193	0.000185	0.000178	0.000172	0.000165	1	1	2	3	4	4	5	6	7
3.6	0.000159	0.000153	0.000147	0.000142	0.000136	0.000131	0.000126	0.000121	0.000117	0.000112	0	1	1	2	2	3	3	4	5
3.7	0.000108	0.000104	0.000100	0.000096	0.000092	0.000088	0.000085	0.000082	0.000078	0.000075									
3.8	0.000072	0.000069	0.000067	0.000064	0.000062	0.000059	0.000057	0.000054	0.000052	0.000050									
3.9	0.000048	0.000046	0.000044	0.000042	0.000041	0.000039	0.000037	0.000036	0.000034	0.000033									

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

- 1 The following information refers to set P and set Q .
Maklumat berikut adalah berkaitan dengan set P dan set Q .

<p>Set $P = \{-1, -3, 1, 2, 4\}$ Set $Q = \{1, 4, 9, 16\}$</p>
--

The relation between set P and set Q is defined by the set of ordered pairs $\{(-1, 1), (-3, 9), (1, 1), (2, 4), (4, 16)\}$.

Hubungan antara set P dan set Q ditakrifkan oleh set pasangan bertertib $\{(-1, 1), (-3, 9), (1, 1), (2, 4), (4, 16)\}$.

- (a) State the type of relation.

Nyatakan jenis hubungan.

- (b) Using the function notation, write a relation between set P and set Q .

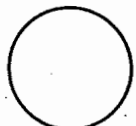
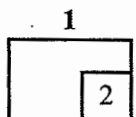
Dengan menggunakan tatatanda fungsi, tulis satu hubungan antara set P dan set Q .

[2 marks]
[2 markah]

Answer / Jawapan :

(a)

(b)



For
Examiner's
Use

2. Given the functions $g : x \rightarrow 2x - 7$ and $gh : x \rightarrow 3 - 8x$, find
Diberi fungsi $g : x \rightarrow 2x - 7$ dan $gh : x \rightarrow 3 - 8x$, cari

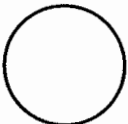
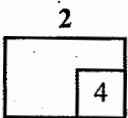
- (a) $h(x)$,
- (b) the value of x when $hg(x) = 9$.
nilai x apabila $hg(x) = 9$.

[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)



3 Given the function $f: x \rightarrow |8 - 3x|$, find

Diberi fungsi $f: x \rightarrow |8 - 3x|$, cari

(a) $f(3)$,

(b) the values of x such that $f(x) = 2$.

nilai-nilai x dengan keadaan $f(x) = 2$.

[3 marks]

[3 markah]

Answer / Jawapan :

(a)

(b)

3

	3
--	---

4 Solve the quadratic equation $2 - 5(x - 2) = 3x(x + 1)$.

Give your answers correct to three decimal places.

Selesaikan persamaan kuadratik $2 - 5(x - 2) = 3x(x + 1)$.

Berikan jawapan anda betul kepada tiga tempat perpuluhan.

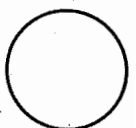
[3 marks]

[3 markah]

Answer / Jawapan :

4

	3
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5 Diagram 5 shows the graph of a quadratic function $f(x) = -2(x + p)^2 - 5$, where p is a constant.

Rajah 5 menunjukkan graf fungsi kuadratik $f(x) = -2(x + p)^2 - 5$, dengan keadaan p ialah pemalar.

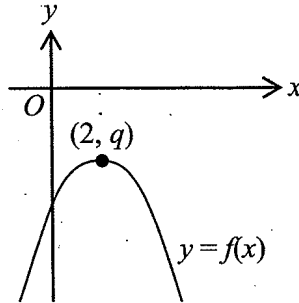


Diagram 5

Rajah 5

The curve $y = f(x)$ has the maximum point $(2, q)$, where q is a constant.

Lengkung $y = f(x)$ mempunyai titik maksimum $(2, q)$, dengan keadaan q ialah pemalar.

State

Nyatakan

- (a) the value of p ,
nilai p ;
- (b) the value of q .
nilai q .

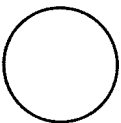
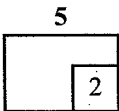
[2 marks]

[2 markah]

Answer / Jawapan :

(a)

(b)

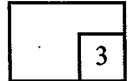


- 6 Find the range of the values of x for which $(3x - 1)^2 \leq 6x + 13$.
Cari julat nilai x bagi $(3x - 1)^2 \leq 6x + 13$.

[3 marks]
[3 markah]

Answer / Jawapan :

6



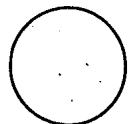
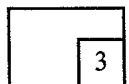
- 7 Solve the equation:
Selesaikan persamaan:

$$5^{2x-1} = \frac{1}{\sqrt{25^{7-x}}}$$

[3 marks]
[3 markah]

Answer / Jawapan :

7

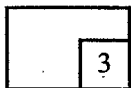


- 8 Given that $\log_{16} x - \log_4 y = 1$, express x in terms of y .
Diberi $\log_{16} x - \log_4 y = 1$, ungkapkan x dalam sebutan y .

[3 marks]
[3 markah]

Answer / Jawapan :

8



- 9 In a geometric progression, the first term is 6 and the sum of the first two terms is 9.
Find the sum to infinity of the progression.

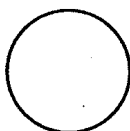
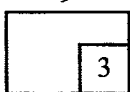
Dalam suatu jangjang geometri, sebutan pertama ialah 6 dan hasil tambah dua sebutan pertama ialah 9.

Cari hasil tambah hingga sebutan ketakterhinggaan bagi jangjang itu.

[3 marks]
[3 markah]

Answer / Jawapan :

9



10 Diagram 10 shows three rectangular shaped cards.

Rajah 10 menunjukkan tiga keping kad berbentuk segi empat tepat.

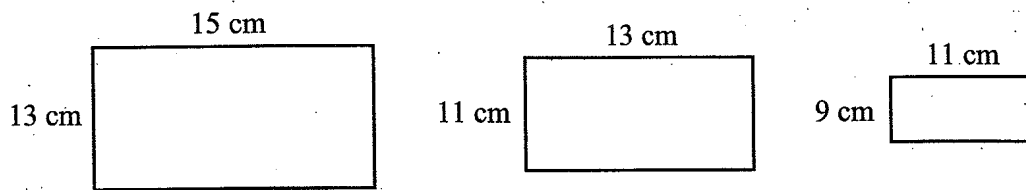


Diagram 10

Rajah 10

The perimeters of the cards form an arithmetic progression.
The terms of the progression are in descending order.

*Perimeter kad-kad itu membentuk suatu jangjang aritmetik.
Sebutan jangjang itu adalah dalam turutan menurun.*

- (a) Write the first three terms of the progression.
Tulis tiga sebutan pertama jangjang itu.
- (b) Find the common difference of the progression.
Cari beza sepunya jangjang itu.

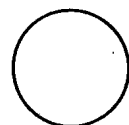
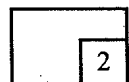
[2 marks]
[2 markah]

Answer / *Jawapan* :

(a)

(b)

10



- 11 The first three terms of a geometric progression are $x - 2$, $x + 4$, $5x + 2$.
Tiga sebutan pertama suatu janjang geometri ialah $x - 2$, $x + 4$, $5x + 2$.

Find

Cari

- (a) the value of x ,
nilai x ,
- (b) the sum from the fourth term to the eighth term.
hasil tambah dari sebutan keempat hingga sebutan kelapan.

[4 marks]

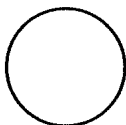
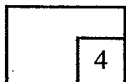
[4 markah]

Answer / *Jawapan* :

(a)

(b)

11



- 12 Diagram 12 shows sector BOC with centre O and sector CXY with centre C .
Rajah 12 menunjukkan sektor BOC berpusat O dan sektor CXY berpusat C .

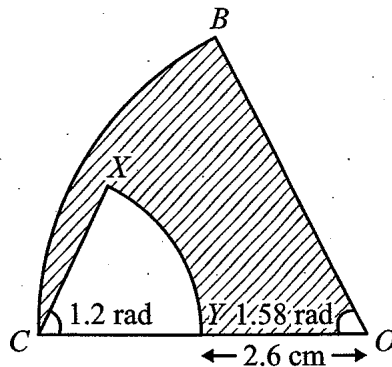


Diagram 12

Rajah 12

It is given that $\angle BOC = 1.58$ radians and the length of arc BC is 7.9 cm.
Diberi bahawa $\angle BOC = 1.58$ radian dan panjang lengkok BC ialah 7.9 cm.

Find

Cari

- (a) the length, in cm, of OC ,
panjang, dalam cm, bagi OC ,
- (b) the area, in cm^2 , of the shaded region.
luas, dalam cm^2 , kawasan berlorek.

[4 marks]

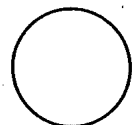
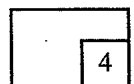
[4 markah]

Answer / Jawapan :

(a)

(b)

12



For
Examiner's
Use

14

3472/1

13 Given that $\underline{a} = 3\underline{i} - 11\underline{j}$ and $\underline{b} = p\underline{i} - 7\underline{j}$, find
Diberi $\underline{a} = 3\underline{i} - 11\underline{j}$ dan $\underline{b} = p\underline{i} - 7\underline{j}$, cari

- (a) $\underline{a} - 2\underline{b}$ in the form $x\underline{i} + y\underline{j}$,
 $\underline{a} - 2\underline{b}$ dalam bentuk $x\underline{i} + y\underline{j}$,
- (b) the values of p if $|\underline{a} - 2\underline{b}| = 5$.
nilai-nilai p jika $|\underline{a} - 2\underline{b}| = 5$.

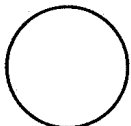
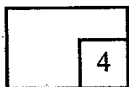
[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)

13



- 14 Diagram 14 shows a triangle PQR .
Rajah 14 menunjukkan segi tiga PQR .

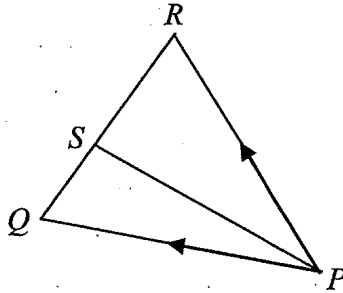


Diagram 14
Rajah 14

Given $\vec{PQ} = 4\vec{a}$, $\vec{PR} = 6\vec{b}$ and point S lies on QR such that $QS : QR = 1 : 4$, express in terms of \vec{a} and \vec{b} .

Diberi $\vec{PQ} = 4\vec{a}$, $\vec{PR} = 6\vec{b}$ dan titik S terletak pada QR dengan keadaan $QS : QR = 1 : 4$, ungkapkan dalam sebutan \vec{a} dan \vec{b} .

(a) \vec{RQ} ,

(b) \vec{SP} .

[4 marks]

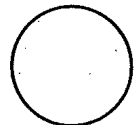
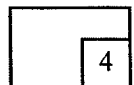
[4 markah]

Answer / Jawapan :

(a)

(b)

14



- 15 Diagram 15 shows a straight line ABC .
Rajah 15 menunjukkan garis lurus ABC .

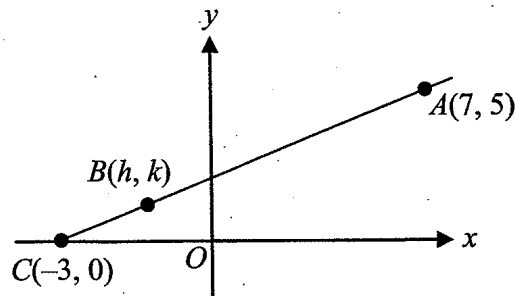


Diagram 15

Rajah 15

The point B lies on AC such that $AB : BC = 4 : 1$.
Find the coordinates of B .

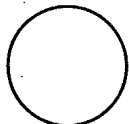
*Titik B terletak di atas AC dengan keadaan $AB : BC = 4 : 1$.
Cari koordinat B .*

[2 marks]
[2 markah]

Answer / Jawapan :

15

2



- 16 It is given that $\sin \theta = k$, where θ is an acute angle.
Diberi bahawa $\sin \theta = k$, dengan keadaan θ ialah sudut tirus.

Find

Cari

(a) $\cos^2 \theta$,
kos² θ ,

(b) $\cos 2\theta$.
kos 2θ .

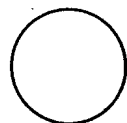
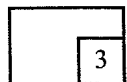
[3 marks]
[3 markah]

Answer / *Jawapan* :

(a)

(b)

16



- 17 The variables x and y are related by the equation $y = kx^3$, where k is a constant. Diagram 17 shows the straight line graph obtained by plotting $\log_{10} y$ against $\log_{10} x$.
*Pemboleh ubah x dan y dihubungkan oleh persamaan $y = kx^3$, dengan keadaan k adalah pemalar.
Rajah 17 menunjukkan graf garis lurus yang diperolehi dengan memplotkan $\log_{10} y$ melawan $\log_{10} x$.*

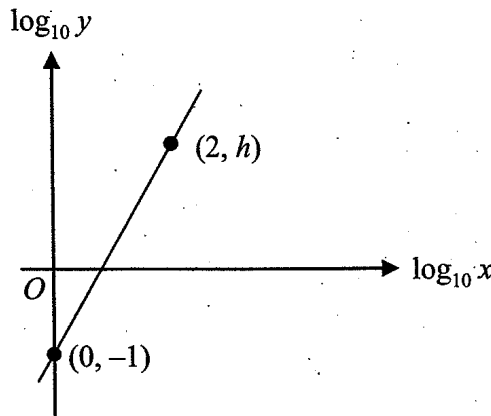


Diagram 17

Rajah 17

Find the value of

Cari nilai

- (a) $\log_{10} k$,
- (b) h .

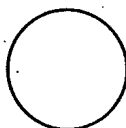
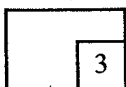
[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

17



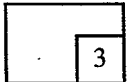
- 18 Given that $\int_1^3 \frac{1}{2} f(x) dx = 4$ and $\int_1^3 [k - f(x)] dx = 5$, find the value of k .

Diberi bahawa $\int_1^3 \frac{1}{2} f(x) dx = 4$ dan $\int_1^3 [k - f(x)] dx = 5$, cari nilai k .

[3 marks]
[3 markah]

Answer / Jawapan :

18



- 19 The gradient function of a curve is $3 - 2x$.
The curve passes through the points $(1, 5)$ and $(2, k)$.

Fungsi kecerunan suatu lengkung ialah $3 - 2x$.
Lengkung ini melalui titik-titik $(1, 5)$ dan $(2, k)$.

Find

Cari

- (a) the equation of the curve,
persamaan lengkung itu,
- (b) the value of k .
nilai k .

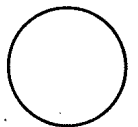
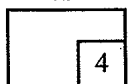
[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)

19



- 20 In a nuclear reactor, the area of a square metal sheet with sides x decreases at a rate of $5 \text{ cm}^2 \text{ s}^{-1}$ when it is cooled.
Find the rate of change of x , in cm s^{-1} , at the instant when $x = 10 \text{ cm}$.

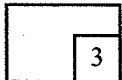
Dalam satu reaktor nuklear, luas sekeping logam dengan sisi x berkurang pada kadar $5 \text{ cm}^2 \text{ s}^{-1}$ bila ianya menyejuk.

Cari kadar perubahan x , dalam cm s^{-1} pada ketika $x = 10 \text{ cm}$.

[3 marks]
[3 markah]

Answer / Jawapan :

20



- 21 Diagram 21 shows part of a curve $y = f(x)$ which passes through the point $(2, 5)$.
Rajah 21 menunjukkan sebahagian lengkung $y = f(x)$ yang melalui titik $(2, 5)$.

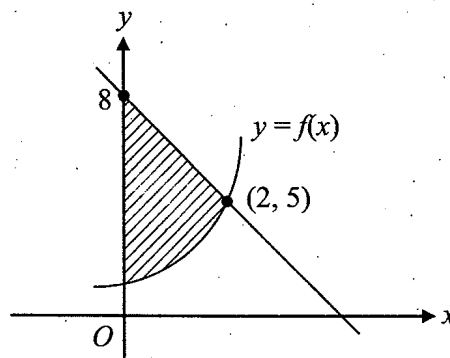


Diagram 21

Rajah 21

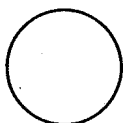
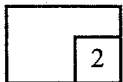
Given that $\int_0^2 f(x) dx = 4$, find the area of the shaded region.

Diberi $\int_0^2 f(x) dx = 4$, cari luas kawasan yang berlorek.

[2 marks]
[2 markah]

Answer / Jawapan :

21



- 22 4 students are chosen to represent the school in the International Mathematical Olympiad. These students are chosen from 6 boys and 5 girls.
Calculate the number of different ways the students can be chosen if

*4 orang murid dipilih untuk mewakili sekolah ke Olympiad Matematik Kebangsaan.
Murid ini dipilih daripada 6 orang lelaki dan 5 orang perempuan.
Hitung bilangan cara yang berlainan murid ini boleh dipilih jika*

- (a) there is no restriction,
tiada syarat dikenakan,
- (b) only one girl is chosen.
hanya seorang perempuan dipilih.

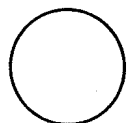
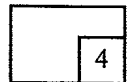
[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)

22



23 In a class, the probability that a student can swim is 0.6. Three students are chosen at random.

Find the probability that

Dalam satu kelas, kebarangkalian seorang murid boleh berenang ialah 0.6. Tiga orang murid dipilih secara rawak.

Cari kebarangkalian bahawa

- (a) all of them can swim,
mereka semua boleh berenang,
- (b) only one of them cannot swim.
hanya seorang daripada mereka tidak boleh berenang.

[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)

23

4

24 A set of scores x_1, x_2, x_3, x_4 and x_5 has a mean of 6 and a standard deviation of 3. Each score is divided by 2 and then 5 is added to it. For the new set of scores, find

Suatu set skor x_1, x_2, x_3, x_4 dan x_5 mempunyai min 6 dan sisihan piawai 3. Setiap skor dibahagi dengan 2 dan kemudian 5 ditambah kepadanya. Untuk set skor yang baru, cari

- (a) the mean,
min,
- (b) the variance.
varians.

[4 marks]
[4 markah]

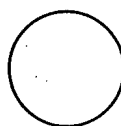
Answer / Jawapan :

(a)

(b)

24

4



- 25 In a study, the life span of male elephants have a normal distribution with a mean μ and a standard deviation of 8 years.

Dalam satu kajian, jangka hayat gajah jantan mempunyai taburan normal dengan min μ dan sisihan piawai 8 tahun.

Find

Cari

- (a) the z -score when the life span is 82 years and $\mu = 70$ years,
skor- z bila jangka hayat adalah 82 tahun dan $\mu = 70$ tahun,
- (b) the value of μ , such that 64.8% of male the elephants have a life span of less than 75 years.
nilai μ , dengan keadaan 64.8% daripada gajah jantan mempunyai jangka hayat kurang dari 75 tahun.

[4 marks]

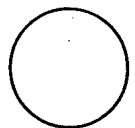
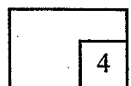
[4 markah]

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 page 2 to 4.
Satu senarai rumus disediakan di halaman 2 hingga 4.
- 9 A four figure table of the Standard Normal Distribution is provided on page 4.
Satu jadual empat angka bagi Taburan Normal Piawai disediakan di halaman 4.
- 10 You may use a scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik.
- 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.