

NO. KAD PENGENALAN

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ANGKA GILIRAN

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SOALAN PRAKTIS BESTARI
PROJEK JAWAB UNTUK JAYA (JAJ) 2018



SIJIL PELAJARAN MALAYSIA

3472/1

ADDITIONAL MATHEMATICS

Kertas 1 / Set 2

2 jam

Dua jam

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Tulis nombor kad pengenalan dan angka giliran anda pada petak 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.*

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

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

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

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

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

$$4 \quad \begin{aligned} &\text{Area under a curve} \\ &\text{Luas di bawah lengkung} \\ &= \int_a^b y \, dx \quad \text{or (atau)} \\ &= \int_a^b x \, dy \end{aligned}$$

$$5 \quad \begin{aligned} &\text{Volume of revolution} \\ &\text{Isipadu kisanan} \\ &= \int_a^b \pi y^2 \, dx \quad \text{or (atau)} \\ &= \int_a^b \pi x^2 \, dy \end{aligned}$$

STATISTICS
STATISTIK

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GEOMETRY
GEOMETRI

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

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

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

$$4 \quad \text{Area of triangle / Luas segi tiga} \\ = \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

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

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

TRIGONOMETRY
TRIGONOMETRI

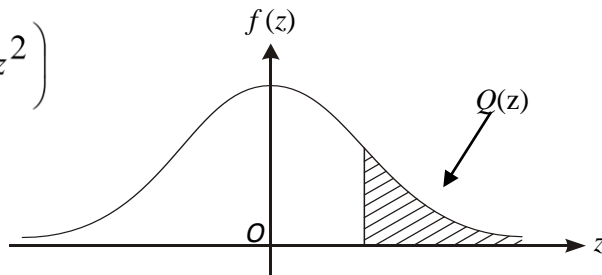
1	Arc length, $s = r\theta$ <i>Panjang lengkok, $s = j\theta$</i>	8	$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$
2	Area of sector, $A = \frac{1}{2} r^2 \theta$ <i>Luas sector, $L = \frac{1}{2} j^2 \theta$</i>	9	$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$ $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin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

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

Answer **all** questions.

Jawab semua soalan.

For
examiner's
use only

1

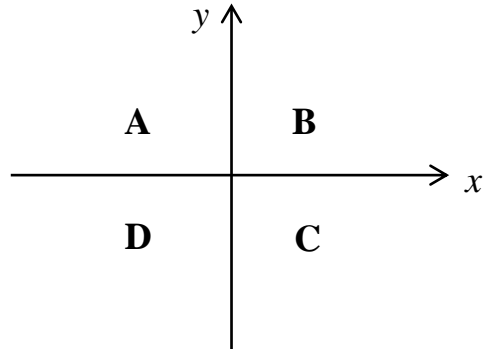


Diagram 1/Rajah 1

Diagram 1 shows the four quadrants which label as A, B, C and D on the Cartesian Plane.

Determine the quadrant if $\tan x < 0$.

Rajah 1, menunjukkan empat sukuan yang di tanda sebagai A, B, C dan D pada satu satah cartesian.

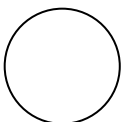
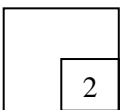
Tentukan sukuan jika $\tan x < 0$.

[2 marks]

[2 markah]

Answer / *Jawapan*:

1



2 Given that $m^h = 2$ and $m^k = 3$. State in terms of h and / or k for $\log_6 24$

Diberi $m^h = 2$ dan $m^k = 3$. Nyatakan dalam sebutan h dan / atau k bagi $\log_6 24$

.

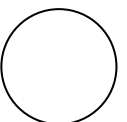
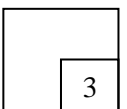
[3 marks]

[3 markah]

Answer / Jawapan:

For
examiner's
use only

2



For
examiner's
use only

- 3 Solve the following equations.
Selesaikan persamaan berikut.

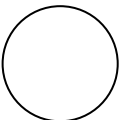
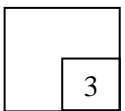
$$8^{x+4} = \frac{1}{4^x \bullet 2^{x+3}}$$

[3 marks]

[3 markah]

Answer / *Jawapan*:

3



4

$$\mathbf{R = \{0,2,3\}}$$

$$\mathbf{S = \{-3, -2, 0, 2\}}$$

*For
examiner's
use only*

Based on the above informations. Relation between R and S are define by sets of ordered pairs below $\{(0,0) (2,-2) (2,2) (3,-3) (3,3)\}$

Berdasarkan maklumat di atas. Hubungan R dan S ditakrifkan oleh set pasangan tertib $\{(0,0) (2,-2) (2,2) (3,-3) (3,3)\}$

State

Nyatakan

(a) Image of 2

Imej bagi 2

(b) Object of 3

Objek bagi 3

[2 marks]

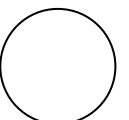
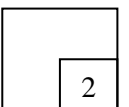
[2 markah]

Answer / *Jawapan:*

(a)

(b)

4



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use only

- 5 Determine whether the function of $f(x) = (2x - 1)^2$ is a function or not? Give your reason.

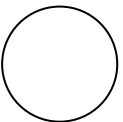
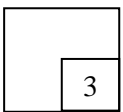
Tentukan sama ada songsangan bagi fungsi $f(x) = (2x - 1)^2$ ialah suatu fungsi atau tidak?? Berikan alasan anda.

[3 marks]

[3 markah]

Answer / Jawapan:

5



- 6 Given $f(x) = 3 - 4x$ and $f^m(x) = -9 + 16x$. Find value of m if, $m > 0$
Diberi $f(x) = 3 - 4x$ dan $f^m(x) = -9 + 16x$. Cari nilai m jika $m > 0$

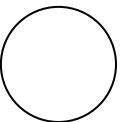
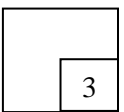
[3 marks]

[3 markah]

Answer / Jawapan:

*For
examiner's
use only*

6



For
examiner's
use only

- 7 The graph of the quadratic function $f(x) = k(x+2)^2 + 3h - 4$, where h and k are constants.

Graf fungsi kuadratik $f(x) = k(x+2)^2 + 3h - 4$, dengan keadaan h dan k ialah pemalar.

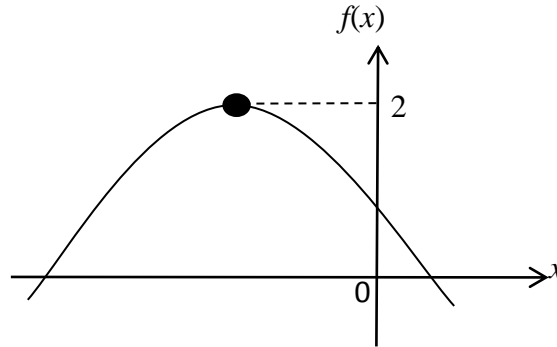


Diagram 7 / Rajah 7

Find

Cari

- the range of values of k
julat nilai bagi k
- the value of h
nilai bagi h
- the maximum point
titik maksimum

[3 marks]

[3 markah]

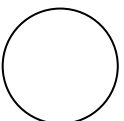
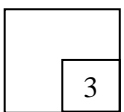
Answer / Jawapan:

(a)

(b)

(c)

7



- 8 A quadratic equation $5x+4x^2 = 2x+q$ is solved by using formula as below:

Sebuah persamaan kuadratik $5x+4x^2 = 2x+q$ diselesaikan dengan menggunakan formula seperti di bawah:

$$x = \frac{-p \pm \sqrt{41}}{8}$$

Find the value of p and of q .

Cari nilai p dan q .

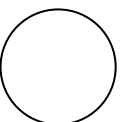
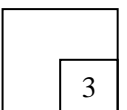
[3 marks]

[3 markah]

Answer / Jawapan:

*For
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8



For
examiner's
use only

- 9 Diagram 9 shows a mirror with each side dimension
Rajah 9 menunjukkan sebuah cermin dengan setiap ukuran sisinya.

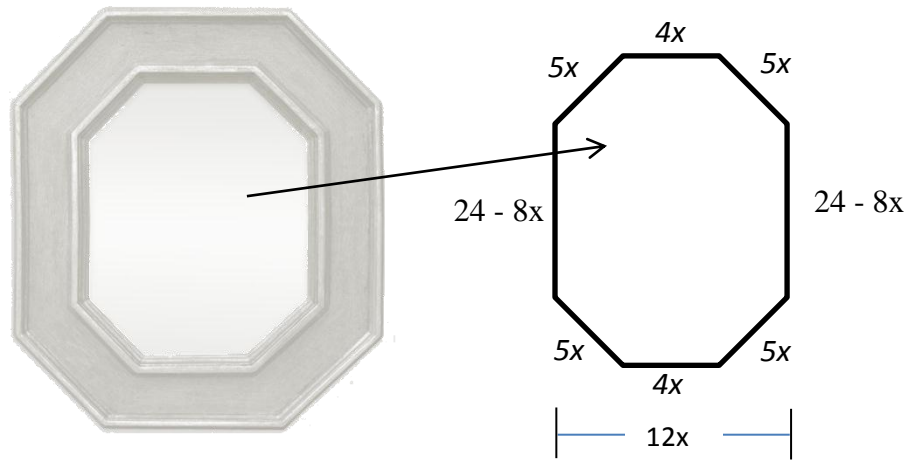


Diagram 9
Rajah 9

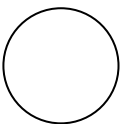
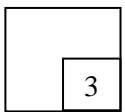
Given the area, in square centimeters of mirror surfaces can be expressed in the form of $A(x) = -48(x + p)^2 + q$. Find the values p and q .

Diberi bahawa luas, dalam sentimeter persegi, bagi permukaan cermin boleh diungkapkan dalam bentuk $A(x) = -48(x + p)^2 + q$. Cari nilai p dan q .

[3 marks]

[3 markah]

Answer / Jawapan:



10 Solve the equation $4\sin x \cos x = -\sqrt{3}$ for $0^\circ \leq x \leq 360^\circ$

Selesaikan persamaan $4\sin x \cos x = -\sqrt{3}$ untuk $0^\circ \leq x \leq 360^\circ$

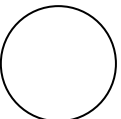
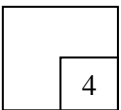
[4 marks]

[4 markah]

Answer / Jawaban:

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10



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11

Given that $\int_{-3}^h (4-2x) dx = h-7$ where $h > 0$. Find the value of h .

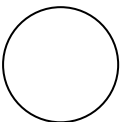
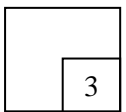
Diberi $\int_{-3}^h (4-2x) dx = h-7$ dengan keadaan $h > 0$. Cari nilai h .

[3 marks]

[3 markah]

Answer / Jawapan:

11



12 (a) Given ${}^{18}P_x = 1$, state the value of x .

Diberi ${}^{18}P_x = 1$, nyatakan nilai x .

(b) How many ways can 7 children be arranged in a row?

Berapa cara 7 orang kanak-kanak boleh disusun dalam satu baris?

[3 marks]

[3 markah]

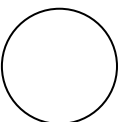
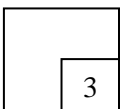
Answer / Jawapan:

(a)

(b)

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12



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13 Given that $\log_{10} k, \log_{10} 10k, \log_{10} 100k, \dots$ are the first 3 terms arithmetic progression.

Diberi $\log_{10} k, \log_{10} 10k, \log_{10} 100k, \dots$ adalah 3 sebutan pertama jangjang aritmetik.

Find /Cari

- (a) the common difference
beza sepunya
- (b) the sum of the first 10 terms
hasil tambah 10 sebutan pertama

[3 marks]

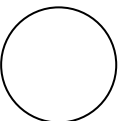
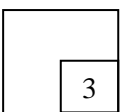
[3 markah]

Answer / Jawapan:

(a)

(b)

13



- 14 A rumour is spread by 2 person at 9.00 am in a village. In the first 10 minutes, each person has spread the rumour to another 3 persons. In every next 10 minutes, the person who had just heard about the rumour, spread it to another 3 new persons who have never heard about it. At 10.00 a.m, all the villagers have heard the rumour. Find the number of villagers who live in the village.

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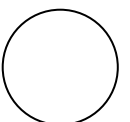
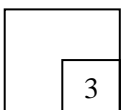
Satu khabar angin telah disebarkan oleh 2 orang di sebuah kampung pada 9.00 pagi. Dalam 10 minit yang pertama, setiap orang telah menceritakan khabar angin itu kepada 3 orang yang lain. Bagi setiap 10 minit berikutnya, setiap orang itu pula menceritakan khabar angin kepada 3 orang yang lain yang belum mendengar khabar angin tersebut. Pada 10.00 pagi, semua penduduk di kampung tersebut telah mendengar khabar angin tersebut. Cari jumlah penduduk yang tinggal di kampung itu.

[3 marks]

[3 markah]

Answer / Jawapan:

14



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- 15 Diagram 15 shows a rifle Colt M4.
Rajah 15 menunjukkan selaras senapang Colt M4.

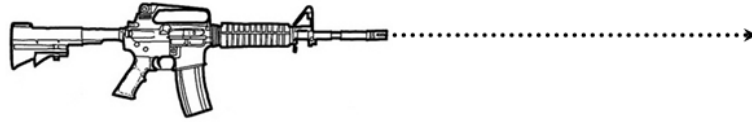


Diagram 15 / Rajah 15

Initial acceleration of a bullet after shoot from the rifle is $\frac{k^3}{9}$. The bullet's acceleration will decrease which is followed by geometric progression. Find

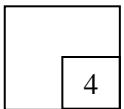
Pecutan awal sebutir peluru apabila dilepaskan daripada senapang tersebut ialah $\frac{k^3}{9}$ ms^{-2} . Pecutan peluru berkenaan akan semakin berkurang mengikut jangjang geometri. Cari

- (a) the values, other than zero, that are not possible for k if the second term of the bullet's acceleration progression is k ,
nilai-nilai yang tidak mungkin bagi k selain daripada sifar jika sebutan kedua jangjang pecutan peluru itu ialah k , [2 marks]
[2 markah]
- (b) the sum of the first second terms of the bullet's acceleration progression if $k = 9$
hasil tambah dua sebutan yang pertama bagi jangjang pecutan peluru itu jika $k = 9$. [2 marks]
[2 markah]

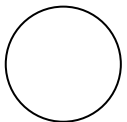
Answer / Jawapan:

- (a)

15



- (b)



- 16 Given that $(2, n)$ is the maximum point of the curve $y = -2x^2 + mx - 3$, find the value of m and n .

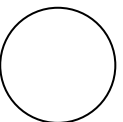
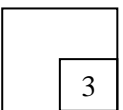
Diberi bahawa $(2, n)$ adalah titik maksimum bagi lengkung $y = -2x^2 + mx - 3$, cari nilai m dan nilai n

[3 marks]

[3 markah]

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16



17

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examiner's
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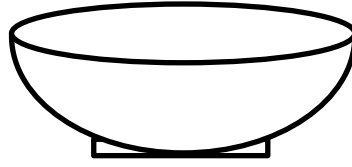


Diagram 17 / Rajah 17

Aida wants to pour 235ml of water into a bowl as shown in Diagram 17 above. The side view of the bowl is represented by the equation of a curve $y = \frac{1}{5}x^2$ and given the height

of the bowl is 5 cm. Determine whether the water will overflow from the bowl or not.

Aida ingin memasukkan 235ml air ke dalam sebiji mangkuk seperti yang ditunjukkan dalam Rajah 17 di atas. Pandangan sisi mangkuk tersebut diwakili oleh persamaan

lengkung $y = \frac{1}{5}x^2$ dan diberi tinggi mangkuk tersebut ialah 5cm. Tentukan sama ada

air tersebut akan melimpah daripada mangkuk itu atau tidak. Berikan sebab anda.

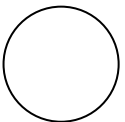
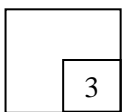
[1000cm³ = 1 liter]

[3 marks]

[3 markah]

Answer / Jawapan:

17



- 18 In an experiment, an unfair dice is rolled n times. The probability of getting number '3' is p . Given that the mean and variance for the probability distribution of the number of times number '3' will appear are 1 and $\frac{3}{4}$. Find the value of p and of n .

Dalam suatu eksperimen, sebilu dadu yang tidak adil dilambung sebanyak n kali. Kebarangkalian untuk mendapatkan nombor '3' ialah k . diberi bahawa min dan varians bagi taburan kebarangkalian bilangan kali nombor '3' akan muncul ialah 1 dan $\frac{3}{4}$. Cari nilai k dan n .

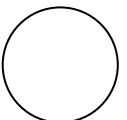
[4 marks]

[4 markah]

Answer / Jawapan :

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18



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- 19 The variables x and y are related by the equation $y = ax - bx^3$, a straight line graph is obtained by plotting Y against x^2 as shown in the diagram, where a , b and Y are constants.

Pemboleh ubah x dan y dihubungkan oleh persamaan $y = ax - bx^3$, satu graf garis lurus diperolehi dengan memplot Y melawan x^2 , di mana a , b dan Y ialah pemalar.

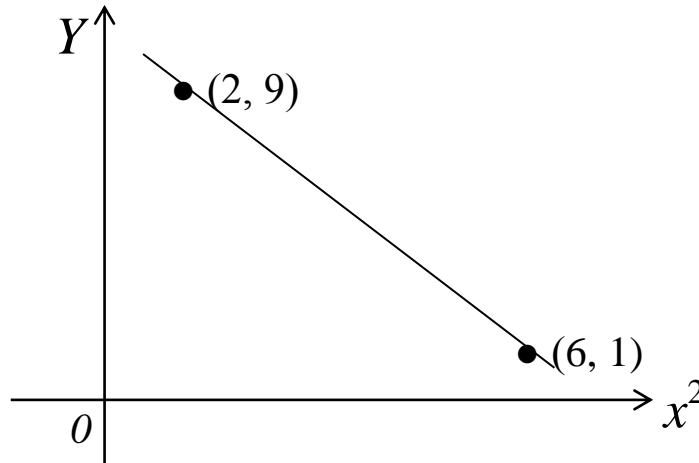


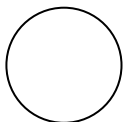
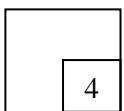
Diagram 19/Rajah 19

- (a) State the Y in terms of x and/or y [1 mark]
Nyatakan Y dalam sebutan x dan/atau y , [1 markah]
- (b) Find the value of a and b . [3 marks]
Cari nilai a dan b . [3 markah]

Answer / Jawapan:

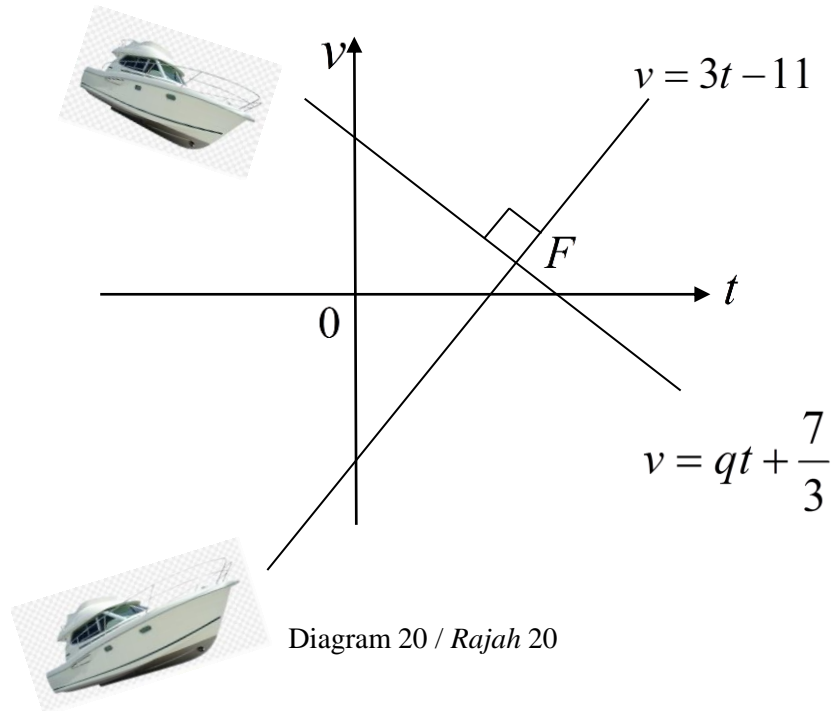
(a)

(b)



20 Diagram 20 shows the position of two boats, A and B.

Rajah 20 menunjukkan kedudukan dua buah bot A dan B.



The velocity of boat A and boat B are $v = 3t - 11$ and $v = qt + 5$ respectively. Both boats are moving straight and perpendicular to each other and meets at points F.

Halaju bagi bot A dan bot B masing-masing adalah $v = 3t - 11$ dan $v = qt + 5$. Kedua-dua bot tersebut bergerak lurus berserenjang antara satu sama lain dan bertembung pada titik F.

a) State the value of q .

Nyatakan nilai bagi q .

b) Find the coordinate of F.

Cari koordinat F.

[3 marks]

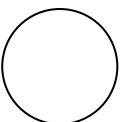
[3 markah]

Answer / Jawapan:

(a)

(b)

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- 21 The mean and standard deviation of a set eleven numbers are 9 and 6 respectively. When the number k was added into the set, mean unchanged. Find the standard deviation of the new set of numbers.

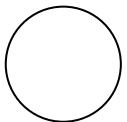
Min dan sisihan piawai bagi suatu set sebelas nombor masing-masing ialah 9 dan 6. Apabila nombor k dimasukkan ke dalam set, min tidak berubah. Cari sisihan piawai bagi set nombor yang baharu.

[3 marks]

[3 markah]

Answer / Jawapan:

21



- 22 Five typist were assigned to the same type of document. The table below shows the time taken by the typist:

Lima orang jurutaip ditugaskan untuk menaip suatu dokumen yang sama. Berikut merupakan masa yang diambil oleh jurutaip-jurutaip tersebut:

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Typist <i>Jurutaip</i>	Time taken (minutes) <i>Masa diambil (minit)</i>
Alia	9.3
Selvam	5.3
Jasmine	5.6
Devan	5.3
Hafiz	5.5

Table 22 / *Jadual 22*

- (a) Find the mean, mode and median time to prepare the documents

Tentukan min, mod dan median masa untuk menyiapkan dokumen tersebut.

- (b) State the most appropriate measurement to represent the efficiency of them. Give your reason.

Nyatakan sukatan yang lebih sesuai digunakan untuk mewakili kecekapan mereka.

Berikan alasan

[4 marks]

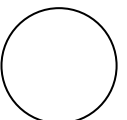
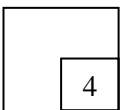
[4 markah]

Answer / *Jawapan:*

(a)

(b)

22



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- 23 Given that the vector.
Diberi bahawa vektor

$$\overrightarrow{OP} = \begin{pmatrix} 3 \\ -4 \end{pmatrix}, \overrightarrow{OQ} = \begin{pmatrix} m \\ -8 \end{pmatrix}, \overrightarrow{OR} = \begin{pmatrix} 6 \\ 2 \end{pmatrix}.$$

- (a) Express \overrightarrow{PR} in the form $x\mathbf{i} + y\mathbf{j}$.
Ungkapkan \overrightarrow{PR} dalam sebutan $x\mathbf{i} + y\mathbf{j}$.
- (b) Find the value of m if P , Q and R are collinear.
Cari nilai m jika, P , Q dan R adalah segaris.

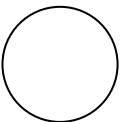
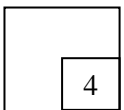
[4 marks]

[4 markah]

Answer / *Jawapan:*

(a)

(b)



- 24 Diagram 24 shows a big circle with radius r and 9 small circles with radius $\frac{1}{9}r$.

Rajah 24 menunjukkan sebuah bulatan besar dengan radius r dan 9 buah bulatan kecil dengan radius $\frac{1}{9}r$.

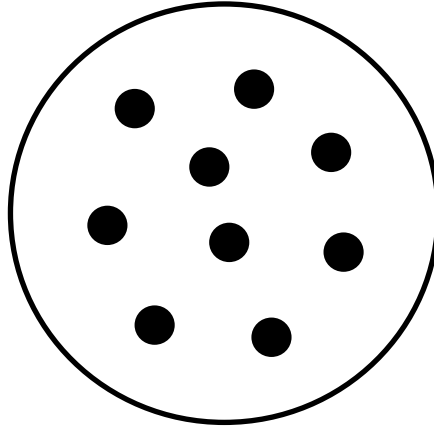


Diagram 24 / Rajah 24

A dart is thrown randomly towards the circle. Find the probability that the dart hits either one of the shaded regions.

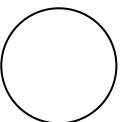
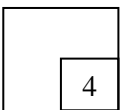
Sebatang pin dibaling secara rawak ke arah bulatan itu. Cari kebarangkalian bahawa pin tersebut mengenai salah satu daripada kawasan berlorek.

[4 marks]

[4 markah]

Answer / Jawapan:

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- 25 Diagram 25 shows a circle ABC with radius 4 cm and centre O .
Rajah 25 menunjukkan bulatan ABC dengan jejari 4 cm berpusat O .

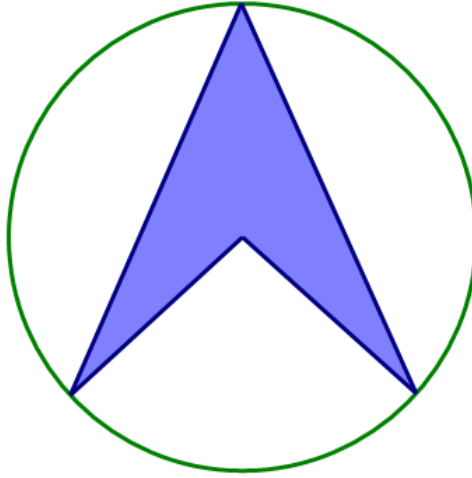


Diagram 25 / Rajah 25

Given $\angle BOC = 1.658 \text{ rad}$, find the area, in cm^2 , of shaded region.

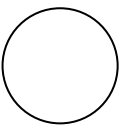
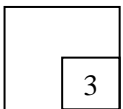
Diberi $\angle BOC = 1.658 \text{ rad}$, cari luas, dalam cm^2 , kawasan berlorek.

[3 marks]

[3 markah]

Answer / Jawapan:

25



END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT