

3472/1
Matematik
Tambahan
Kertas 1
Ogos 2026
2 jam

Logo sekolah masing-masing

SEKOLAH MENENGAH KEBANGSAAN

KOTA TINGGI

PEPERIKSAAN PERCUBAAN SPM 2026

MATEMATIK TAMBAHAN

Kertas 1

Dua jam

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

1. Tulis **nama** dan **kelas** anda pada ruang yang disediakan.
2. Kertas peperiksaan ini mengandungi **dua** bahagian: **Bahagian A** dan **Bahagian B**.
3. Jawapan hendaklah ditulis pada ruang jawapan yang disediakan di dalam kertas peperiksaan ini.
4. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
5. Kerja mengira anda mesti ditunjukkan.
6. **Kertas peperiksaan ini** hendaklah diserahkan kepada pengawas peperiksaan pada akhir peperiksaan.

SOALAN	MARKAH PENUH	MARKAH DIPEROLEH
BAHAGIAN A		
1	6	
2	6	
3	5	
4	4	
5	6	
6	6	
7	3	
8	5	
9	4	
10	7	
11	6	
12	6	
JUMLAH	64	
BAHAGIAN B		
13	8	
14	8	
15	8	
JUMLAH	16	
JUMLAH MARKAH		

RUMUS
FORMULAE

1	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	18	Isi padu kisaran <i>Volume of revolution</i>
2	$a^m \times a^n = a^{m+n}$		$= \int_a^b \pi y^2 dx$ atau (or)
3	$a^m \div a^n = a^{m-n}$		$= \int_a^b \pi x^2 dy$
4	$(a^m)^n = a^{mn}$		
5	$\log_a mn = \log_a m + \log_a n$	19	$I = \frac{Q_1}{Q_0} \times 100$
6	$\log_a \frac{m}{n} = \log_a m - \log_a n$	20	$\bar{I} = \frac{\sum I_i W_i}{\sum W_i}$
7	$\log_a m^n = n \log_a m$	21	${}^n P_r = \frac{n!}{(n-r)!}$
8	$\log_a b = \frac{\log_c b}{\log_c a}$	22	${}^n C_r = \frac{n!}{(n-r)!r!}$
9	$T_n = a + (n-1)d$	23	$P(X=r) = {}^n C_r p^r q^{n-r}, p+q=1$
10	$S_n = \frac{n}{2}[2a + (n-1)d]$	24	Min / Mean, $\mu = np$
11	$T_n = ar^{n-1}$	25	$\sigma = \sqrt{npq}$
12	$S_n = \frac{a(1-r^n)}{1-r} = \frac{a(r^n-1)}{r-1}, r \neq 1$	26	$z = \frac{X-\mu}{\sigma}$
13	$S_\infty = \frac{a}{1-r}, r < 1$	27	Panjang lengkok, $s = j\theta$ <i>Arc length, $s = r\theta$</i>
14	$y = uv, \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$	28	Luas sektor, $L = \frac{1}{2}j^2\theta$ <i>Area of sector, $A = \frac{1}{2}r^2\theta$</i>
15	$y = \frac{u}{v}, \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$	29	$\sin^2 A + \cos^2 A = 1$
16	$\frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$	30	$\sin^2 A + \cos^2 A = 1$ $\sec^2 A = 1 + \tan^2 A$ $\sec^2 A = 1 + \tan^2 A$
17	Luas di bawah lengkung <i>Area under a curve</i> $= \int_a^b y dx$ atau (or) $= \int_a^b x dy$	31	$\csc^2 A = 1 + \cot^2 A$ $\operatorname{cosec}^2 A = 1 + \cot^2 A$

$$32 \quad \sin 2A = 2 \sin A \cos A$$

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

$$33 \quad \begin{aligned} \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \\ \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \end{aligned}$$

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

$$35 \quad \begin{aligned} \sin(A \pm B) &= \sin A \cos B \pm \cos A \sin B \\ \sin(A \pm B) &= \sin A \cos B \pm \cos A \sin B \end{aligned}$$

$$36 \quad \begin{aligned} \cos(A \pm B) &= \cos A \cos B \mp \sin A \sin B \\ \cos(A \pm B) &= \cos A \cos B \mp \sin A \sin B \end{aligned}$$

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

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

$$39 \quad \begin{aligned} a^2 &= b^2 + c^2 - 2bc \cos A \\ a^2 &= b^2 + c^2 - 2bc \cos A \end{aligned}$$

$$40 \quad \begin{aligned} &\text{Luas segi tiga / Area of triangle} \\ &= \frac{1}{2} ab \sin C \end{aligned}$$

$$41 \quad \begin{aligned} &\text{Titik yang membahagi suatu tembereng} \\ &\text{garis} \end{aligned}$$

$$\begin{aligned} &A \text{ point dividing a segment of a line} \\ (x, y) &= \left(\frac{nx_1 + mx_2}{m + n}, \frac{ny_1 + my_2}{m + n} \right) \end{aligned}$$

$$42 \quad \begin{aligned} &\text{Luas segi tiga / Area of triangle} \\ &= \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - ((x_2 y_1 + x_3 y_2 + x_1 y_3))| \end{aligned}$$

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

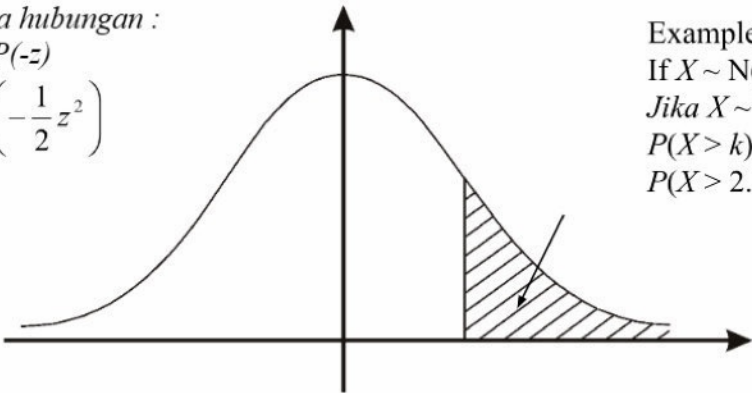
$$44 \quad \hat{\underline{r}} = \frac{x\underline{i} + y\underline{j}}{\sqrt{x^2 + y^2}}$$

KEBARANGKALIAN Hujung Atas $Q(z)$ BAGI TABURAN NORMAL $N(0, 1)$
THE UPPER TAIL PROBABILITY $Q(z)$ FOR THE NORMAL DISTRIBUTION $N(0, 1)$

z	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
											Minus / Tolak								
0.0	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

For negative z use relation :
Bagi z negative guna hubungan :
 $Q(z) = 1 - Q(-z) = P(-z)$

If $f(z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2} z^2\right)$
 $Q(z) = \int_k^{\infty} f(z) dz$



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

Bahagian A**Section A**

[64 markah]

[64 marks]

Jawab **semua** soalanAnswer **all** questions

- 1 (a) Titik-titik $A(4r, r)$, $B(e, f)$ dan $C(3e, 4f)$ terletak pada suatu garis lurus. B membahagi garis lurus AC dengan nisbah 3 : 4. Ungkapkan e dalam sebutan f . [3 markah]
Points $A(4r, r)$, $B(e, f)$ and $C(3e, 4f)$ lie on a straight line. B divides the line segment AC in the ratio 3 : 4. Express e in terms of f . [3 marks]
- (b) Titik P bergerak dengan jaraknya dari titik $S(1, 2)$ dan $T(4, -1)$ dalam Nisbah 2: 1. Cari persamaan lokus bagi titik bergerak P. [3 markah]
A point P moves such that its distances from the points $S(1, 2)$ and $T(4, -1)$ are in the ratio 2: 1. Find the equation of the locus of the moving point P. [3 marks]

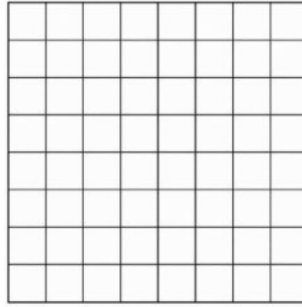
Jawapan / Answer :

- 2 (a) $\overrightarrow{SR}$ mewakili halaju sebuah kereta 60 km/j ke Timur.
 $\overrightarrow{SR}$ represents the velocity of a car 60 km/h to the East.

Tentukan sama ada kuantiti berikut ialah kuantiti vektor atau skalar. Kemudian, lukis dan label dalam grid diberi. [3 markah]

Determine whether the following quantities are vector or scalar quantities. Then, draw and label them in the given grid. [3 marks]

Jawapan/answer :

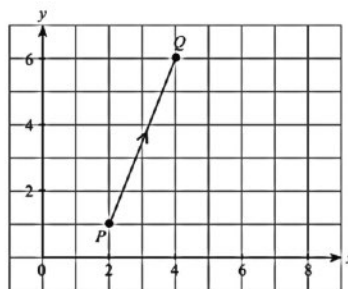


1 unit mewakili 10 km/j

1 unit represents 10 km/j

- (b) Rajah 1 menunjukkan vektor $\overrightarrow{PQ}$ yang dilukis pada satu satah Cartes. Cari magnitud dan arah pergerakan vektor itu. [3 markah]

The diagram 1 shows a vector $\overrightarrow{PQ}$ is drawn on a Cartesian plane. Find magnitude and direction of the vector. [3 marks]



Rajah 1
Diagram 1

Jawapan/answer :

- 3 (a) Sebutan ke- n bagi suatu jangjang geometri diberi oleh $T_n = p(3)^{n-1}$, dengan keadaan p ialah pemalar. Diberi bahawa hasil tambah dua sebutan pertama ialah 24. Tentukan
- The n -th term of a geometric progression is given by $T_n = p(3)^{n-1}$ where p is a constant. Given that the sum of the first two terms is 24, determine:*
- (i) nilai p ,
the value of p ,
 - (ii) sebutan pertama jangjang tersebut.
the first term of the progression.
- [3 markah]
[3 marks]
- (b) Ungkapkan nombor perpuluhan berulang 0.545454... dalam bentuk pecahan termudah dengan menggunakan konsep jangjang geometri. [2 markah]
- Express the recurring decimal 0.545454... in its simplest fractional form using the concept of a geometric progression.* [2 marks]

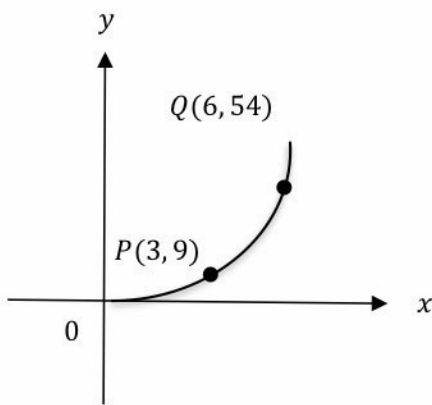
Jawapan / Answer:

(a)

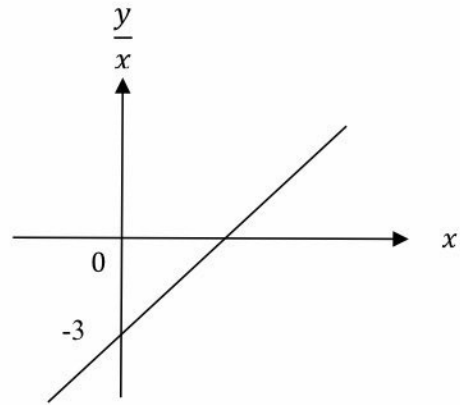
(b)

- 4 Rajah 2(a) menunjukkan sebahagian daripada lengkung $y = ax^2 + bx$, dengan keadaan a dan b ialah pemalar.

Figure 2(a) shows part of the curve $y = ax^2 + bx$, where a and b are constants.



Rajah 2(a)
Diagram 2(a)



Rajah 2(b)
Diagram 2(b)

- (a) Graf bagi lengkung $y = ax^2 + bx$ ditukar kepada bentuk linear, satu garis lurus diperolehi seperti yang ditunjukkan dalam rajah 2(b). Cari

The graph of the curve $y = ax^2 + bx$ is converted into a linear form, resulting in a straight line as shown in figure 2(b). Find

- kecerunan bagi garis lurus
the gradient of a straight line
- pintasan- x
the x -intercept

[3 markah]

[3 marks]

- (b) Lakarkan graf $\frac{y}{x^2}$ melawan $\frac{1}{x}$ dengan menunjukkan titik P dan Q .

[1 markah]

Sketch the graph of $\frac{y}{x^2}$ against $\frac{1}{x}$, showing points P and Q .

[1 mark]

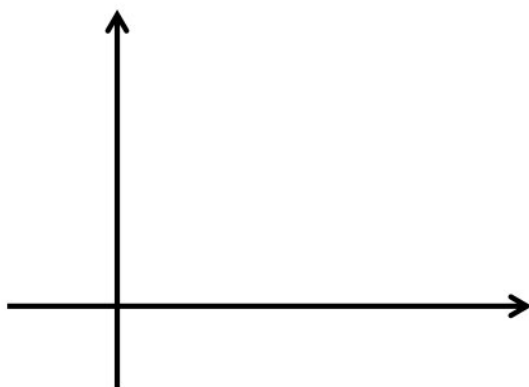
Jawapan/ Answer:

Jawapan/ *Answer*:

(a)(i)

(a)(ii)

(b)



- 5 (a) Persamaan kuadrat $2x^2 + 5x - 3 = 0$ mempunyai punca-punca p dan q , dengan keadaan $p > q$. Cari nilai p dan nilai q .
The quadratic equation $2x^2 + 5x - 3 = 0$ has roots p and q , where $p > q$. Find the value of p and of q .

[3 markah]

[3 marks]

- (b) Menggunakan nilai p dan nilai q dari 5 (a), bentukkan persamaan kuadrat yang mempunyai punca-punca $p + 2$ dan $3q - 1$.
Using the values of p and q from 5(a), form the quadratic equation which has roots $p + 2$ and $3q - 1$.

[3 markah]

[3 marks]

Jawapan/ Answer:

- 6 Diberi pasangan persamaan berikut :
- Given the following pairs of equations :*

$$x - y = 2$$

$$4x^2 + 3y^2 = 36$$

- (a) Lengkapkan jadual nilai y bagi persamaan berikut.
- Complete the table of y values for the following equation.*

Jawapan/ *Answer:*

x	-3	-2	-1	0	1	2	3	4
$x - y = 2$	-5	-4	-3	-2	-1	0	1	
$4x^2 + 3y^2 = 36$	0	± 2.58	± 3.27		± 3.27	± 2.58	0	-

[2 markah]

[2 marks]

- (b) Dengan menggunakan skala 2 cm 1 unit pada kedua-dua paksi, lukis graf bagi $x - y = 2$ dan $4x^2 + 3y^2 = 36$ dengan domain $-3 \leq x \leq 4$.
- Using a scale of 2 cm for 1 unit on both axes, draw the graph of $x - y = 2$ and $4x^2 + 3y^2 = 36$ with domain $-3 \leq x \leq 4$.*

[3 marks]

- (c) Seterusnya, tentukan penyelesaian persamaan serentak berikut.
- Hence, determine the solution to the simultaneous equations.*

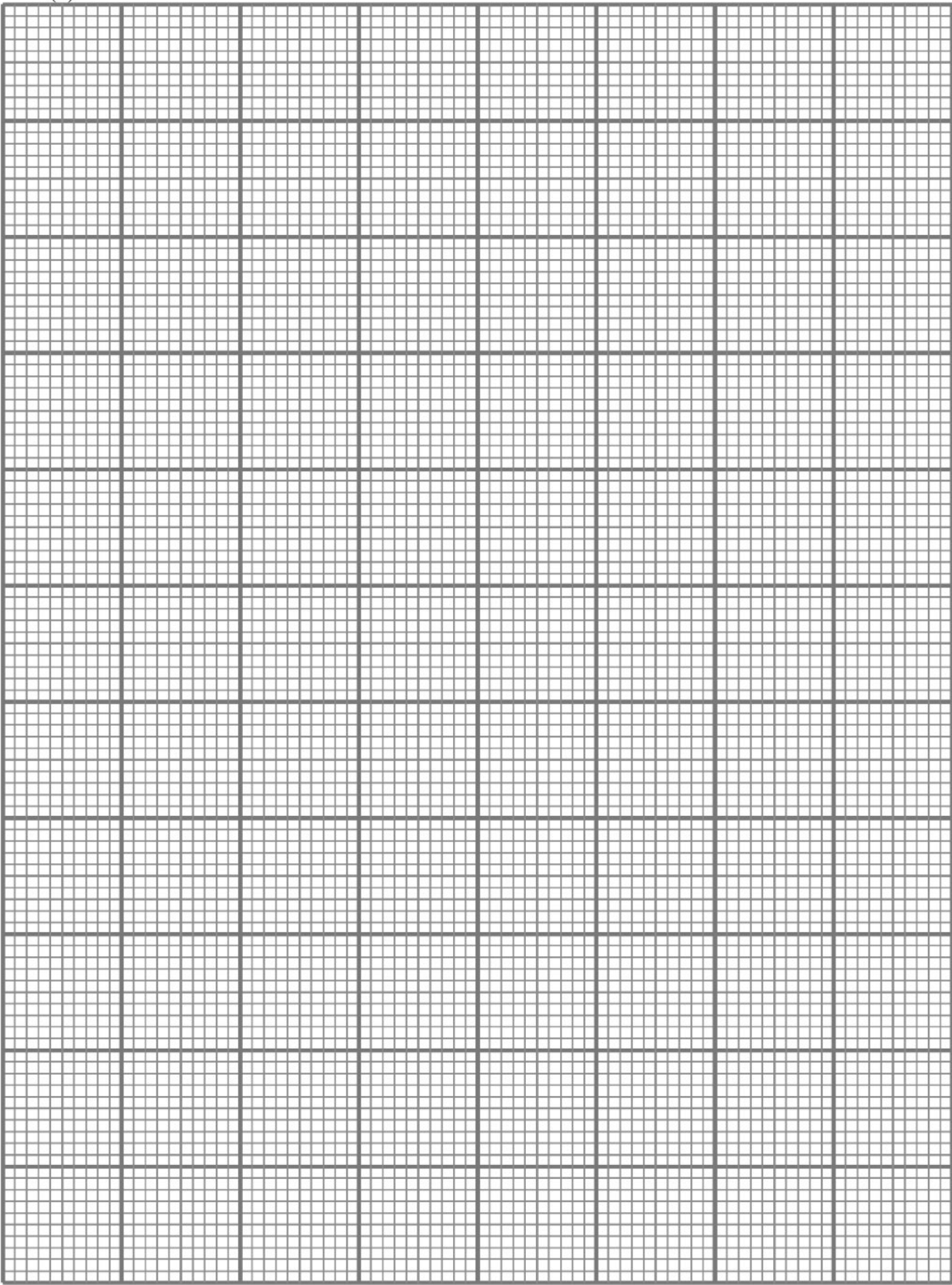
[1 markah]

[1 mark]

Jawapan/ *Answer:*

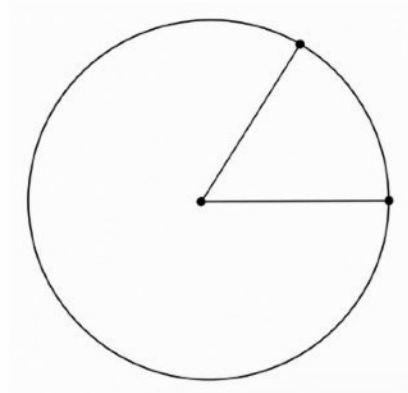
Jawapan/ *Answer*:

(b)



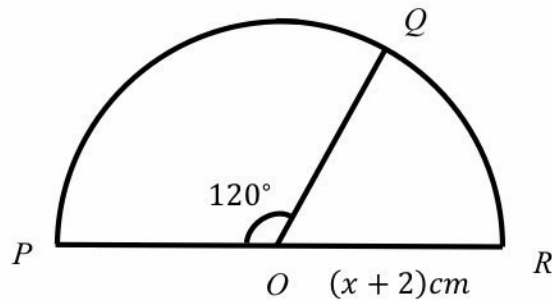
- 7 (a) Lukis dan labelkan sudut pusat yang bersamaan 1 rad pada rajah 3 di ruang jawapan [1 markah]
Draw and label a central angle of 1 rad on the diagram 3 in the answer space. [1 mark]

Jawapan / Answer:



Rajah 3
 Diagram 3

- (b) Rajah 4 menunjukkan semibulatan PQR dengan pusat O . Hitung panjang PQ dalam sebutan x dan π . [2 markah]
Diagram 4 shows a semicircle PQR with center O . Calculate the length of PQ in terms of x and π . [2 marks]



Rajah 4
 Diagram 4

Jawapan / Answer:

- 8 (a) Cari nilai bagi had berikut:

Find the value of the following limit:

$$\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$$

[2 markah]

[2 marks]

- (b) Diberi fungsi $y = 2x^2$. Cari terbitan pertama bagi fungsi tersebut dengan menggunakan prinsip pertama. [3 markah]

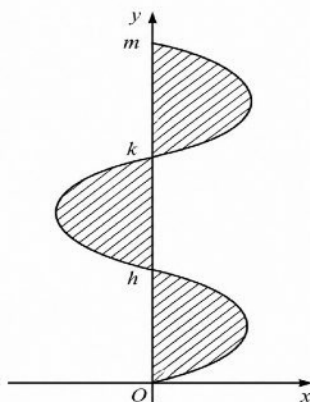
Given the function $y = 2x^2$. Find the first derivative of the function using the first principle. [3 marks]

Jawapan / Answer:

(a)

(b)

- 9 Rajah 5 menunjukkan graf $x = f(y)$.
 Diagram 5 shows the graph $x = f(y)$.



Rajah 5

Diagram 5

Diberi bahawa luas kawasan berlorek ialah 8 unit² dan $\int_0^h f(y)dy = \frac{5}{2}$, $\int_k^m f(y)dy = \frac{9}{2}$,

It is given that area of the shaded region is 8 unit² and $\int_0^h f(y)dy = \frac{5}{2}$, $\int_k^m f(y)dy = \frac{9}{2}$,

Cari nilai bagi

Find the value of

(a) $\int_h^k f(y)dy$

(b) $\int_h^k x dy + \int_k^m 3f(y)dy$

[4 markah]

[4 marks]

Jawapan / Answer:

- 10** (a) Selesaikan persamaan
Solve the equation

$$3^{x+1} - 3^x = 18$$

[3 markah]

[3 marks]

- (b) Sebuah segitiga bersudut tegak PQR dengan lebar $PQ = 3\sqrt{2} + 4$ cm mempunyai keluasan $8\sqrt{2} + 10$ cm². Cari tinggi QR , dalam cm, segitiga tersebut dalam bentuk $a + b\sqrt{2}$.

[4 markah]

A right-angled triangle PQR with a width $PQ = 3\sqrt{2} + 4$ cm has an area of $8\sqrt{2} + 10$ cm². Find the height QR , in cm, of the triangle in the form of $a + b\sqrt{2}$.

[4 marks]

Jawapan / Answer:

- 11 (a) Satu kumpulan debat sekolah terdiri daripada 6 orang ahli dengan 2 daripada ahli kumpulan itu ialah lelaki. 2 orang ahli kumpulan debat itu dipilih secara rawak untuk menyertai suatu pertandingan dan X mewakili bilangan ahli kumpulan lelaki. Nyatakan sama ada X ialah pemboleh ubah rawak diskret atau pemboleh ubah rawak selanjar. Berikan justifikasi. [1 markah]
A school debate team consists of 6 members, of whom 2 are boys. Two members of the debate team are selected at random to participate in a competition, and X represents the number of male members selected. State whether X is a discrete random variable or a continuous random variable. Give a justification. [1 mark]
- (b) Masa yang diambil oleh murid untuk menyiapkan satu soalan matematik yang tertentu bertaburan normal dengan min, μ dan sisihan piawai, σ . Jika 13% murid mengambil masa lebih daripada 15 minit dan 10% murid mengambil masa kurang daripada 10 minit, hitung nilai μ dan nilai σ . [5 markah]
The time taken by students to complete a particular mathematics question is normally distributed with mean, μ , and standard deviation, σ . If 13% of the students take more than 15 minutes and 10% of the students take less than 10 minutes, calculate the value of μ and the value of σ . [5 marks]

Jawapan / Answer:





- 12** (a) (i) Berapakah bilangan cara untuk menyusun 6 orang murid untuk duduk di sebuah meja bulat di dalam sebuah dewan?
How many ways to arrange 6 students to sit in a round table in a hall?
- (ii) Cari bilangan susunan yang mungkin jika huruf-huruf dari perkataan 'MAKANAN' disusun dalam satu barisan.
Find the number of possible arrangements if the letters of the word 'MAKANAN' are arranged in a row.

[3 markah]

[3 marks]

Jawapan / Answer:



- 12** (b) Satu pasukan yang mengandungi empat orang murid akan ditubuhkan untuk menyertai pertandingan STEM peringkat daerah. Penubuhan pasukan tersebut akan dipilih daripada enam orang murid lelaki dan empat orang murid perempuan. Cari bilangan cara berbeza untuk menubuh pasukan itu jika
- A team of four students will be formed to participate in the STEM competition at the district level. The team will be selected from six boys and four girls. Find the number of different ways to form the team if*
- (i) semua murid yang dipilih adalah perempuan,
all the students chosen are girls,
- (ii) sekurang-kurangnya dua orang murid lelaki dipilih.
at least two boys are chosen.

[3 markah]

[3 marks]

Jawapan / Answer:

(a)(ii)

(b)

Bahagian B**Section B**

[16 markah]

[16 marks]

Bahagian ini mengandungi **tiga** soalan. Jawab **dua** soalan.*This section have **three** questions. Answer **two** question.*

- 13** (a) Diberi bahawa $f(x) = |2x - 4|$.
It is given that $f(x) = |2x - 4|$.
- (i) Cari domain jika $f(x) > 10$. [3 markah]
Find the domain if $f(x) > 10$. [3 marks]
- (ii) Lakar graf bagi $f(x) = |2x - 4|$ untuk $-1 \leq x \leq 4$. Seterusnya, nyatakan kodomain yang sepadan. [3 markah]
Sketch the graph of $f(x) = |2x - 4|$ for $-1 \leq x \leq 4$. Hence, state the corresponding codomain. [3 marks]
- (b) Diberi $f(x) = x - 3$. Cari fungsi $f^n(x)$ dengan keadaan n ialah integer positif. [2 markah]
Given $f(x) = x - 3$. Find the function of $f^n(x)$ if n is positive integer. [2 marks]

Jawapan/ Answer:

(a)(i)

Jawapan/ *Answer*:

(a)(ii)

(b)

14 Kapal A meninggalkan pelabuhan O semasa laut tenang, dengan halaju $V_A = 6\mathbf{i} + 8\mathbf{j} \text{ kmj}^{-1}$.

Pada masa yang sama, kapal B belayar dari pelabuhan P dengan halaju $V_B = -4\mathbf{i} + 4\mathbf{j} \text{ kmj}^{-1}$

Diberi vektor kedudukan pelabuhan P , $\overrightarrow{OP} = 50\mathbf{i} + 20\mathbf{j}$.

Ship A left port O when the sea was calm, with the velocity of $V_A = 6\mathbf{i} + 8\mathbf{j} \text{ kmj}^{-1}$. At the same time, ship B left port P with velocity of $V_B = -4\mathbf{i} + 4\mathbf{j} \text{ kmj}^{-1}$.

Given that position vector of port P is $\overrightarrow{OP} = 50\mathbf{i} + 20\mathbf{j}$.

- (a) Selepas t jam, vektor kedudukan kapal A ialah $\overrightarrow{OA} = t(6\mathbf{i} + 8\mathbf{j}) \text{ kmj}^{-1}$. Cari vektor kedudukan bagi kapal B pada masa itu. [2 markah]

After t hours, position vector of ship A is $\overrightarrow{OA} = t(6\mathbf{i} + 8\mathbf{j}) \text{ kmj}^{-1}$. Find the position vector of ship B at that time. [2 marks]

- (b) Tunjukkan bahawa kapal A akan memintas kapal B dan cari masa apabila keadaan ini berlaku. [6 markah]

Show that ship A will cross ship B and find the time when this occurs. [6 marks]

Jawapan / Answer:

(a)

(b)

- 15 (a) Tanpa menggunakan kalkulator, cari nilai bagi $\cos 75^\circ$. [4 markah]
Without using calculator, find the value of $\cos 75^\circ$. [4 marks]

- (b) Diberi $\sin A = \frac{3}{5}$, $0^\circ < A < 90^\circ$ dan $\sin B = -\frac{12}{13}$, $90^\circ < B < 270^\circ$. Cari $\tan (A - B)$.
Given that $\cos A = \frac{3}{5}$, $0^\circ < A < 90^\circ$ and $\sin B = -\frac{12}{13}$, $90^\circ < B < 270^\circ$. Find $\tan (A - B)$.
 [4 markah]
 [4 marks]

Jawapan / Answer:

(a)

KERTAS PEPERIKSAAN TAMAT