

3472/1
Matematik Tambahan
Kertas 1
Julai 2026
2 jam

Nama :
.....
Tingkatan :
.....

PEPERIKSAAN PERCUBAAN SPM TAHUN 2026
TINGKATAN 5

MATEMATIK TAMBAHAN
KERTAS 1
Dua jam

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Tulis nama dan kelas anda pada ruang yang disediakan.
2. Kertas soalan ini adalah dalam dwibahasa.
3. Soalan dalam Bahasa Melayu mendahului soalan yang sepadan dalam Bahasa Inggeris.
4. Calon dibenarkan menjawab keseluruhan atau sebahagian soalan dalam Bahasa Melayu atau Bahasa Inggeris.
5. Kertas soalan ini mengandungi 15 soalan.
6. Jawab **semua** soalan di **Bahagian A** dan **2 soalan** di **Bahagian B**.
7. Tulis jawapan anda dalam ruangan yang disediakan dalam kertas soalan.
8. Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.
9. Satu senarai rumus disediakan di halaman 2 & 3.
10. Anda dibenarkan menggunakan kalkulator saintifik.

Untuk Kegunaan Pemeriksa			
	Soalan	Markah Penuh	Markah Diperolehi
BAHAGIAN A	1	5	
	2	6	
	3	5	
	4	4	
	5	6	
	6	6	
	7	5	
	8	4	
	9	4	
	10	7	
	11	6	
	12	6	
BAHAGIAN B	13	8	
	14	8	
	15	8	
	JUMLAH	80	

Kertas soalan ini mengandungi 24 halaman bercetak

RUMUS FORMULAE

Rumus-rumus berikut boleh membantu anda menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used.

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

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

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

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

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

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

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

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

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

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

$$11. T_n = ar^{n-1}$$

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

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

$$14. y = uv, \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$15. y = \frac{u}{v}, \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$16. \frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$$

17. Luas di bawah lengkung

Area under a curve

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

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

18. Isipadu janaan

Volume of generation

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

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

$$19. I = \frac{Q_1}{Q_0} \times 100$$

$$20. \bar{I} = \frac{\sum W_i I_i}{\sum W_i}$$

$$21. {}^n P_r = \frac{n!}{(n-r)!}$$

$$22. {}^n C_r = \frac{n!}{(n-r)!r!}$$

$$23. P(X=r) = {}^n C_r p^r q^{n-r}, p+q=1$$

$$24. \text{Min / Mean, } \mu = np$$

$$25. \sigma = \sqrt{npq}$$

$$26. Z = \frac{X-\mu}{\sigma}$$

$$27. \text{Panjang lengkok, } s = j\theta$$

$$\text{Arc length, } s = r\theta$$

$$28. \text{Luas sektor, } A = \frac{1}{2}j^2\theta$$

$$\text{Area of sector, } A = \frac{1}{2}r^2\theta$$

$$29. \sin^2 A + \cos^2 A = 1$$

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

$$30. \sec^2 A = 1 + \tan^2 A$$

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

$$31. \operatorname{cosec}^2 A = 1 + \cot^2 A$$

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



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

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

$$33. \cos 2A = \cos^2 A - \sin^2 A$$

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

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

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

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

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

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

$$35. \sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

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

$$36. \cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

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

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

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

$$39. a^2 = b^2 + c^2 - 2bc \cos A$$

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

$$40. \text{Luas segitiga / Area of triangle}$$

$$= \frac{1}{2} ab \sin C$$

$$41. \text{Titik yang membahagi suatu tembereng garis}$$

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

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

$$42. \text{Luas segitiga / Area of triangle}$$

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

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

$$44. \hat{r} = \frac{xi + yj}{\sqrt{x^2 + y^2}}$$

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	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

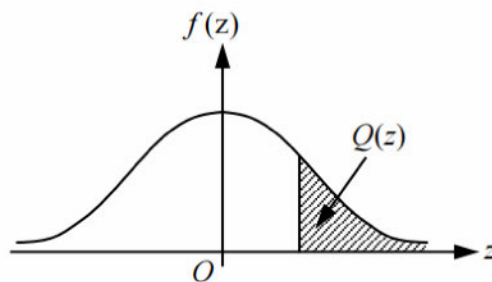
Bagi z negatif guna hubungan

For negative z use relation

$$Q(z) = 1 - Q(-z) = P(-z)$$

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

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



Contoh/Example:

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 / marks]

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

1. (a) Titik-titik $D(2k, k)$, $E(h, g)$ dan $F(4h, 3g)$ terletak pada suatu garis lurus. E membahagi garis lurus DF dengan nisbah 3:1. Ungkapkan h dalam sebutan g .

The points $D(2k, k)$, $E(h, g)$ and $F(4h, 3g)$ lie on a straight line. E divides the straight line DF in the ratio of 3 : 1. Express h in terms of g .

[2 markah/marks]

- (b) Titik $A(-2, 3)$ dan titik $B(4, 5)$ berada pada satah Cartes. Titik P bergerak supaya $\angle APB = 90^\circ$. Cari persamaan lokus bagi P .

Point $A(-2, 3)$ and point $B(4, 5)$ are on a Cartesian plane. Point P moves such that $\angle APB = 90^\circ$. Find the equation of the locus of P .

[3 markah/marks]

Jawapan / Answer :



2. (a) Lengkapkan Jadual 1 di bawah.

Complete Table 1 below.

Kuantiti skala <i>Scale quantity</i>	Kuantiti vektor <i>Vector quantity</i>
	Berat <i>Weight</i>
Jarak <i>Distance</i>	

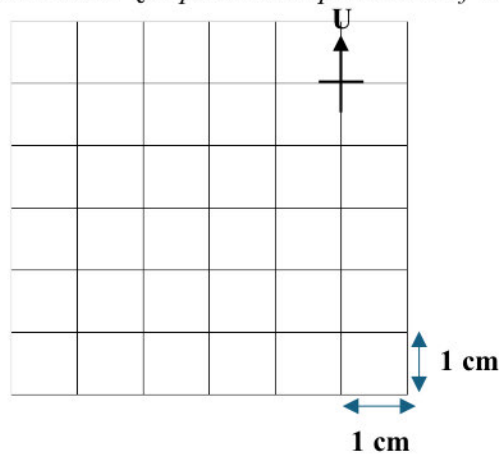
Jadual /Table 1

[1 markah/mark]

- (b) Lukis dan label vector $\overrightarrow{PQ}$. Diberi $\overrightarrow{PQ}$ mewakili sesaran 6 km ke barat.

Draw and label vector $\overrightarrow{PQ}$. Given that $\overrightarrow{PQ}$ represents displacement of 6 km to the west.

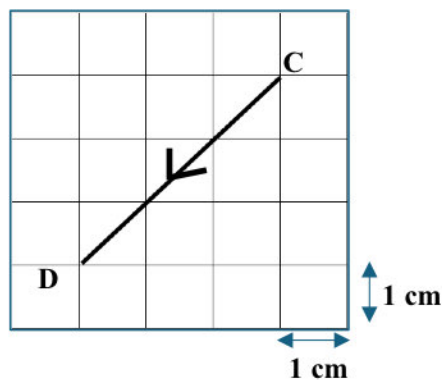
1 cm mewakili 2 km
1 cm represents 2 km



Rajah /Diagram 1

[1 markah/mark]

- (c)



Rajah /Diagram 2

Rajah 2 menunjukkan vektor $\overrightarrow{CD}$ yang mewakili sesaran suatu zarah dari titik C ke titik D.

Nyatakan $\overrightarrow{CD}$ dalam bentuk $a\hat{i} + b\hat{j}$. Seterusnya, cari magnitud dan arah bagi $\overrightarrow{CD}$.

Diagram 2 shows vector $\vec{CD}$ that represents the displacement of the particle from point C to point D. State $\vec{CD}$ in the form $a\hat{i} + b\hat{j}$. Hence, find the magnitude and the direction of $\vec{CD}$.

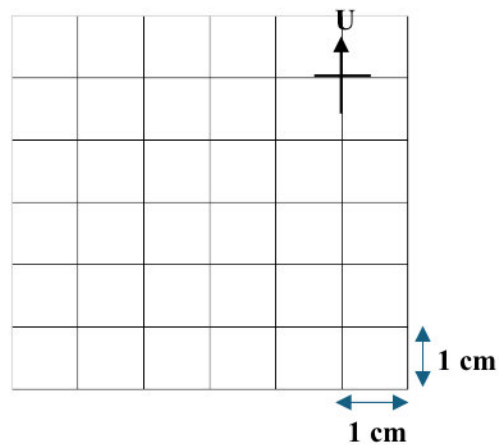
[4 markah/marks]

Jawapan / Answer :

(a)

Kuantiti skala <i>Scale quantity</i>	Kuantiti vektor <i>Vector quantity</i>
	Berat <i>Weight</i>
Jarak <i>Distance</i>	

(b)



Rajah /Diagram 1

(c)

3. (a) Diberi bahawa sebutan ke- n bagi suatu jangjang geometri ialah $T_n = \frac{2}{3}r^{n-1}, r \neq p$.

Given the n^{th} term of a geometric progression is $T_n = \frac{2}{3}r^{n-1}, r \neq p$.

Nyatakan

State

- (i) nilai p
the value of p
- (ii) sebutan pertama bagi jangjang itu
the first term of the progression

[2 markah/marks]

Jawapan / Answer :

- (b) Ungkapkan perpuluhan berulang 2.5363636... sebagai satu pecahan.

Express the following recurring decimals 2.5363636... as a fraction.

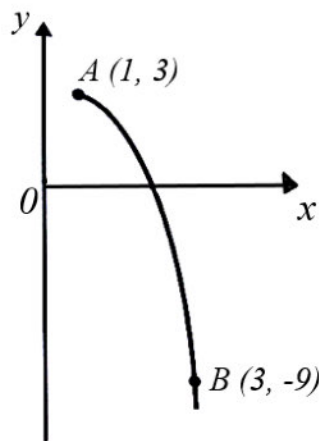
[3 markah/marks]

Jawapan / Answer :



4. Rajah 3 menunjukkan sebahagian daripada graf bagi $y = -3x^2 + 6x$ yang melalui $A(1,3)$ dan $B(3,-9)$. Pada ruang jawapan, lakarkan graf garis lurus bagi $\frac{y}{x}$ melawan x . Tunjukkan dengan jelas pintasan- x , pintasan- y , titik A dan titik B yang sepadan. Seterusnya, nyatakan kecerunan garis lurus itu.

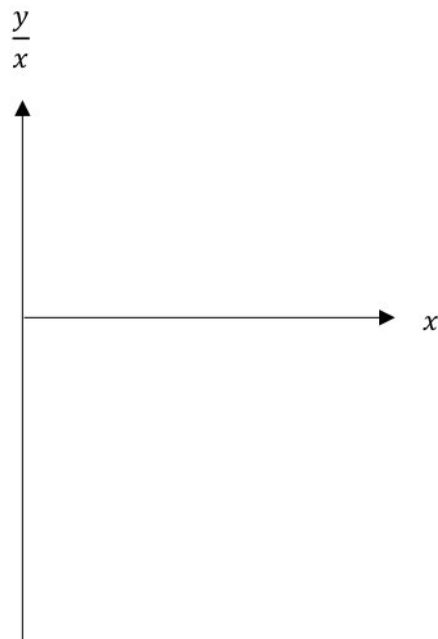
Diagram 3 shows part of the graph of $y = -3x^2 + 6x$ that passes through the point $A(1,3)$ and $B(3,-9)$. In the answer space, sketch the graph of a straight line for $\frac{y}{x}$ against x . Clearly show the x -intercept, y -intercept, corresponding point A and point B . Hence, state the gradient of the straight line.



Rajah /Diagram 3

[4 markah/marks]

Jawapan/answer:



5. (a) Punca-punca bagi persamaan $3x^2 - 2kx + k + 4 = 0$ adalah α dan β . Jika $\alpha^2 + \beta^2 = \frac{4}{9}$, cari nilai yang mungkin bagi k .

The roots of the equation $3x^2 - 2kx + k + 4 = 0$ are α and β . If $\alpha^2 + \beta^2 = \frac{4}{9}$, find the possible values of k .

[3 markah/marks]

- (b) Diberi p dan q ialah punca bagi persamaan kuadratik $5x - 1 = 3x^2$. Bentukkan persamaan kuadratik yang mempunyai punca-punca $3p$ dan $3q$.

Given p and q are the roots of the equation $5x - 1 = 3x^2$. Form a quadratic equation that has roots $3p$ and $3q$.

[3 markah/marks]

Jawapan / Answer :

6. Lengkapkan jadual nilai dalam Rajah 4. Dengan menggunakan skala 2 cm kepada 1 pada paksi- x dan 2 cm kepada 1 pada paksi- y , selesaikan persamaan serentak berikut dengan menggunakan kaedah perwakilan graf.

Complete table in the Diagram 4. By using a scale of 2cm to 1 on x -axis and 2cm to 1 on y -axis, solve the following simultaneous equations, using the graphical representation method.

$$x + y = 3$$

$$x^2 + y^2 = 5$$

x	-2	-1	0	1	2
Nilai y ($x + y = 3$)			3		
Nilai y ($x^2 + y^2 = 5$)				± 2	

Rajah/ Diagram 4

[6 markah/marks]

Jawapan / Answer :



7. (a) Lukiskan sektor POR dan labelkan nilai sudut, dalam radian, jika nilai jejari adalah sama dengan nilai panjang lengkok PR .

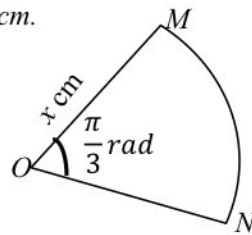
Draw a sector POR and label the value of angle, in radian, if the radius is equal to the arc PR .

[1 markah/marks]

Jawapan / Answer :

- (b) Rajah 5 menunjukkan sektor MON dengan pusat O , $\angle MON = \frac{\pi}{3}$ rad dan jejari x cm. Perimeter bagi sektor MON ialah 8 cm.

Diagram 5 shows a sector MON with a centre O , $\angle MON = \frac{\pi}{3}$ rad and radius x cm. The perimeter of the sector MON is 8 cm.



Rajah /Diagram 5

- (i) Cari nilai x , dalam sebutan π .

Find the value of x , in term of π

[2 markah/marks]

- (ii) Cari panjang lengkok MN , dalam sebutan π .

Find the length of arc MN , in terms of π .

[2 markah/marks]

Jawapan / Answer :

8. (a) Tentukan nilai had bagi fungsi $\lim_{x \rightarrow 2} (2x^2 + 1)$

Determine the limit value for $\lim_{x \rightarrow 2} (2x^2 + 1)$

[1 markah/mark]

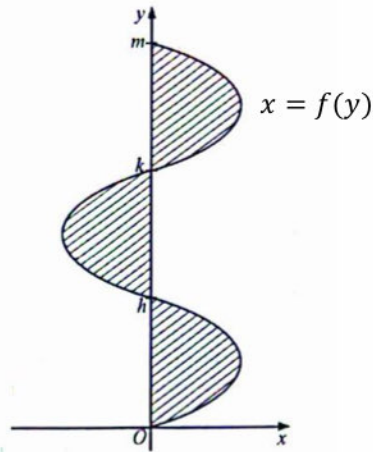
- (b) Cari $\frac{dy}{dx}$ bagi fungsi $y = 2x^2 + 1$ dengan menggunakan prinsip pertama.

Find $\frac{dy}{dx}$ for $y = 2x^2 + 1$ by using first principle.

[3 markah/marks]

Jawapan / Answer :

9.



Rajah / Diagram 6

Rajah 6 menunjukkan graf $x = f(y)$. Diberi luas kawasan berlorek adalah $\frac{15}{4}$ unit² dan

$$\int_k^m f(y) dy = \int_0^h f(y) dy = \frac{5}{4}.$$

Diagram 6 shows the graph of $x = f(y)$. Given the area of the shaded region is $\frac{15}{4}$ unit² and

$$\int_k^m f(y) dy = \int_0^h f(y) dy = \frac{5}{4}.$$

Cari nilai bagi

Find the value of

(a) $\int_h^0 f(y) dy$

[1 markah/marks]

(b) $\int_h^m f(y) dy$

[1 markah/marks]

(c) $\int_k^h f(y) dy + \int_k^m \frac{7}{3} f(y) dy$

[2 markah/marks]

Jawapan / Answer :



10. (a) Selesaikan $3^{2x} - 4(3^{x+1}) + 27 = 0$

Solve $3^{2x} - 4(3^{x+1}) + 27 = 0$

[3 markah/marks]

- (b) Sebuah kuboid mempunyai tapak segi empat sama dengan luas $(5 - \sqrt{3}) \text{ cm}^2$ dan isipadunya ialah $(82 - 12\sqrt{3}) \text{ cm}^3$. Cari tinggi kuboid dalam bentuk $a + b\sqrt{3}$.

A cuboid has a square base of area $(5 - \sqrt{3}) \text{ cm}^2$ and a volume of $(82 - 12\sqrt{3}) \text{ cm}^3$. Find the height of the cuboid in the form of $a + b\sqrt{3}$.

[4 markah/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 anda.

A school debate team consists of 6 people, 2 of them are boys. 2 members of the debate team are randomly selected to participate in a contest and X represents the number of boys being selected. State whether X is a discrete random variable or a continuous random variable. Give your justification.

[1 markah/mark]

- (b) Markah murid dalam Tingkatan 5 Cemerlang bagi ujian Matematik adalah mengikut taburan normal dengan min, μ , dan sisihan piawai, σ . 40% daripada murid tersebut memperoleh kurang

daripada 45 markah dan 20% daripada murid tersebut memperoleh lebih daripada 65 markah. Tentukan nilai bagi μ dan σ .

The marks of students in Form 5 Cemerlang in Mathematics test are normally distributed with mean, μ , and standard deviation, σ . 40% of the students obtained less than 45 marks and 20% of the students had more than 65 marks. Determine the values of μ and σ .

[5 markah/marks]

Jawapan / Answer :



12. (a) (i) Digit-digit 1,2,3,4,5,6,7 dan 8 disusun dalam satu bulatan. Cari bilangan cara menyusun jika semua digit ganjil mesti bersama.

The digits 1,2,3,4,5,6,7 and 8 are arranged in a circle. Find the number of ways to arrange them if all the odd digits must be together.

[1 markah/mark]

- (ii) Huruf-huruf dalam perkataan di bawah disusun semula. Cari bilangan susunan jika semua huruf A mesti bersama-sama.

The letters in the word below are to be rearranged. Find number of arrangements if all the letter A are kept together.

Y	A	Y	A	S	A	N
---	---	---	---	---	---	---

[2 markah/marks]

Jawapan / Answer :

- (b) Dini menyediakan hadiah hari jadi untuk adiknya. Hadiahnya mengandungi 5 item yang dipilih daripada 6 alat tulis dan 7 buku cerita. Berapa bilangan cara hadiah tersebut dapat dipilih jika
- Dini is preparing birthday present for his brother. His present consists of 5 items chosen from 6 stationery items and 7 story books. How many ways can the present be chosen if*
- (i) hanya satu alat tulis dipilih.
only one stationery is chosen
 - (ii) bilangan buku cerita lebih daripada alat tulis.
the number of storybooks more than stationery.

[3 markah/marks]

Jawapan / Answer :

Bahagian B / Section B

[16 markah / marks]

Jawab mana-mana **dua** soalan daripada bahagian ini.*Answer any **two** questions from this section.*

13. (a) Diberi bahawa $f(x) = px + q$ dan $f^3(x) = 8x + 14$. Cari nilai p dan q .
Given that $f(x) = px + q$ and $f^3(x) = 8x + 14$. Find the value of p and q .

[3 markah/marks]

- (b) Suatu fungsi f ditakrifkan oleh $f(x) = |x - 3|$ untuk domain $-1 \leq x \leq 7$.
Function f is defined by $f(x) = |x - 3|$ for the domain $-1 \leq x \leq 7$.

- (i) Lakarkan graf f dan nyatakan julat bagi f .
Sketch the graf of f and state the range of f .

[3 markah/marks]

- (ii) Cari domain bagi $f(x) \leq 2$.
Find the domain for $f(x) \leq 2$

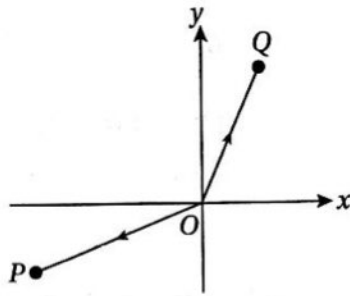
[2 markah/marks]

Jawapan / Answer :



14. (a) Dalam Rajah 14, $\overrightarrow{OP} = -6\hat{i} + 2\hat{j}$ dan $\overrightarrow{OQ} = 3\hat{i} + 7\hat{j}$.

In Diagram 14, $\overrightarrow{OP} = -6\hat{i} + 2\hat{j}$ dan $\overrightarrow{OQ} = 3\hat{i} + 7\hat{j}$.



Rajah/Diagram 14

Tentukan / Determine

- (i) $\overrightarrow{PQ}$
- (ii) vektor unit dalam arah $\overrightarrow{PQ}$.

the unit vector in the direction of $\overrightarrow{PQ}$.

[4 markah/marks]

Jawapan / Answer :

- (b) Kereta A meninggalkan bandar O dengan halaju $V_A = (6\hat{i} + 8\hat{j}) \text{ km } j^{-1}$. Pada masa yang sama, kereta B meninggalkan bandar $C(100,40)$ dengan halaju $V_B = (-4\hat{i} + 4\hat{j}) \text{ km } j^{-1}$. Cari masa apabila kereta A akan memintas kereta B .

Car A left town O with velocity of $V_A = (6\hat{i} + 8\hat{j}) \text{ km } h^{-1}$. At the same time, car Q left town C (100,40) with velocity of $V_B = (-4\hat{i} + 4\hat{j}) \text{ km } h^{-1}$. Find the time when the car A will overtake the car B.

[4 markah/marks]

Jawapan / Answer :

15. (a) Diberi bahawa $\cos A = -\frac{12}{13}$ dan $\tan B = \frac{3}{4}$, dengan keadaan A ialah sudut cakah dan B ialah sudut tirus.

Given that $\cos A = -\frac{12}{13}$ and $\tan B = \frac{3}{4}$, where A is an obtuse angle and B is an acute angle.

Cari/Find

(i) $\tan A$

[2 markah/marks]

(ii) $\cos (A - B)$

[2 markah/marks]

Jawapan / Answer :

- (b) Tanpa guna kalkulator, buktikan bahawa $2 \cos(p + 45^\circ) \cos(p - 45^\circ) = \cos 2p$.

Without using a calculator, prove that $2 \cos(p + 45^\circ) \cos(p - 45^\circ) = \cos 2p$.

[4 markah/marks]

Jawapan / Answer :

TAMAT KERTAS SOALAN
END OF QUESTION PAPER