

MODUL PINTAS TINGKATAN LIMA

2 JAM

3472/1

NO. KAD PENGENALAN

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ANGKA GILIRAN

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NAMA :

TINGKATAN :

MATEMATIK TAMBAHAN

Kertas 1

ARAHAN :

1. Jangan Buka Kertas Peperiksaan Ini Sehingga Diberitahu.
2. Tulis nombor kad pengenalan, angka giliran, nama, tingkatan anda pada ruang yang disediakan.
3. Kertas peperiksaan ini mengandungi dua bahagian: Bahagian A dan Bahagian B.
4. Jawapan hendaklah ditulis pada ruang jawapan yang disediakan di dalam kertas peperiksaan ini.
5. Kertas peperiksaan ini adalah dalam dwibahasa.
6. Jawapan boleh ditulis dalam bahasa Melayu atau bahasa Inggeris.
7. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
8. Kerja mengira mesti ditunjukkan.
9. Jadual Kebarangkalian Hujung Atas $Q(z)$ Bagi Taburan Normal $N(0,1)$ disediakan di halaman 4.
10. Kertas peperiksaan ini hendaklah diserahkan kepada pengawas peperiksaan pada akhir peperiksaan.

Soalan	Markah Penuh	Markah Diperoleh
BAHAGIAN A		
1	3	
2	4	
3	6	
4	6	
5	4	
6	4	
7	3	
8	5	
9	8	
10	8	
11	5	
12	8	
JUMLAH	64	
BAHAGIAN B		
13	8	
14	8	
15	8	
JUMLAH	16	
JUMLAH KESELURUHAN MARKAH		

Kertas peperiksaan ini mengandungi 31 halaman bercetak dan 1 halaman tidak bercetak.

[Lihat halaman sebelah

3472/1

RUMUS FORMULAE

- 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 $S_n = \frac{a(1-r^n)}{1-r} = \frac{a(r^n-1)}{r-1}, r \neq 1$
- 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
 $= \int_a^b y \, dx$ atau (or)
 $= \int_a^b x \, dy$
- 18 Isi padu kisaran
Volume of revolution
 $= \int_a^b \pi y^2 \, dx$ atau (or)
 $= \int_a^b \pi x^2 \, dy$
- 19 $I = \frac{Q_1}{Q_0} \times 100$
- 20 $\bar{I} = \frac{\sum I_i W_i}{\sum W_i}$
- 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 Min / Mean, $\mu = np$
- 25 $\sigma = \sqrt{npq}$
- 26 $z = \frac{X - \mu}{\sigma}$
- 27 Panjang lengkok, $s = j\theta$
Arc length, $s = r\theta$
- 28 Luas sektor, $L = \frac{1}{2} j^2 \theta$

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 Luas segi tiga / *Area of triangle*
 $= \frac{1}{2} ab \sin C$
- 41 Titik yang membahagi suatu tembereng garis
A 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 Luas segi tiga / *Area of triangle*
 $= \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$
- 43 $|\underline{r}| = \sqrt{x^2 + y^2}$
- 44 $\hat{r} = \frac{x\underline{i} + y\underline{j}}{\sqrt{x^2 + y^2}}$

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	TOLAK								
0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641	4	8	12	16	20	24	28	32	36
0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247	4	8	12	16	20	24	28	32	36
0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859	4	8	12	15	19	23	27	31	35
0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483	4	7	11	15	19	22	26	30	34
0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121	4	7	11	14	18	22	25	29	32
0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776	3	7	10	14	17	20	24	27	31
0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451	3	7	10	13	16	19	23	26	29
0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148	3	6	9	12	15	18	21	24	27
0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867	3	5	8	11	14	16	19	22	25
0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611	3	5	8	10	13	15	18	20	23
1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379	2	5	7	9	12	14	16	19	21
1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170	2	4	6	8	10	12	14	16	18
1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985	2	4	6	7	9	11	13	15	17
1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823	2	3	5	6	8	10	11	13	14
1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681	1	3	4	6	7	8	10	11	13
1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559	1	2	4	5	6	7	8	10	11
1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455	1	2	3	4	5	6	7	8	9
1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367	1	2	3	4	4	5	6	7	8
1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294	1	1	2	3	4	4	5	6	6
1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233	1	1	2	2	3	4	4	5	5
2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183	0	1	1	2	2	3	3	4	4
2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143	0	1	1	2	2	2	3	3	4
2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110	0	1	1	1	2	2	2	3	3
2.3	.0107	.0104	.0102		.00990	.00964	.00939	.00914			0	1	1	1	1	2	2	2	2
									.00889	.00866	.00842	2	5	7	9	12	14	16	18
2.4	.00820	.00798	.00776	.00755	.00734						2	4	6	8	11	13	15	17	19
						.00714	.00695	.00676	.00657	.00639	2	4	6	7	9	11	13	15	17
2.5	.00621	.00604	.00587	.00570	.00554	.00539	.00523	.00508	.00494	.00480	2	3	5	6	8	9	11	12	14
2.6	.00466	.00453	.00440	.00427	.00415	.00402	.00391	.00379	.00368	.00357	1	2	3	5	6	7	8	9	10
2.7	.00347	.00336	.00326	.00317	.00307	.00298	.00289	.00280	.00272	.00264	1	2	3	4	5	6	7	8	9
2.8	.00256	.00248	.00240	.00233	.00226	.00219	.00212	.00205	.00199	.00193	1	1	2	3	4	4	5	6	6
2.9	.00187	.00181	.00175	.00169	.00164	.00159	.00154	.00149	.00144	.00139	0	1	1	2	2	3	3	4	4
3.0	.00135	.00131	.00126	.00122	.00118	.00114	.00111	.00107	.00104	.00100	0	1	1	2	2	2	3	3	4

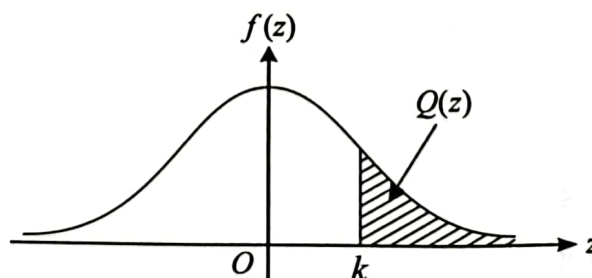
Bagi z negatif guna hubungan:

For negative z use relation:

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

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

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



Contoh / Example:

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

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

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

$$P(X > 2.1) = Q(2.1) = 0.0179$$

Bahagian A**[64 markah]****Jawab semua soalan.**

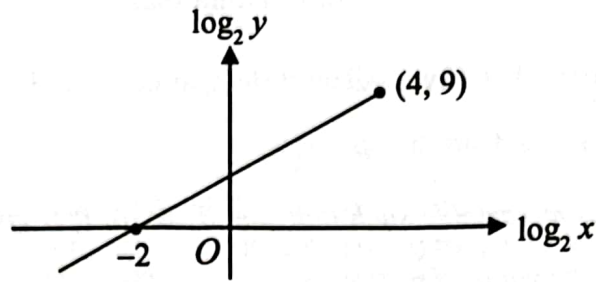
- 1 X ialah satu pemboleh ubah rawak diskret dengan keadaan $X \sim B(8, p)$. Diberi bahawa sisihan piawai ialah $\frac{4}{3}$ dan $p < q$. Cari nilai p .

X is a discrete random variable such that $X \sim B(8, p)$. It is given that the standard deviation is $\frac{4}{3}$ and $p < q$. Find the value of p .

[3 markah]**[3 marks]****Jawapan / Answer:**

- 2 Rajah 2 menunjukkan graf bagi $\log_2 y$ melawan $\log_2 x$ yang melalui titik $(4, 9)$.

Diagram 2 shows the graph of $\log_2 y$ against $\log_2 x$ which passes through point $(4, 9)$.



Rajah 2
Diagram 2

Ungkapkan y dalam sebutan x .

Express y in terms of x .

[4 markah]

[4 marks]

Jawapan / Answer:

- 3 Segelung dawai dengan panjang p cm dipotong kepada 32 bahagian dengan keadaan panjang bahagian-bahagian itu membentuk satu jangjang aritmetik. Diberi panjang bagi bahagian yang terpanjang ialah 105 cm dan jumlah panjang bagi tiga bahagian yang terpendek ialah 45 cm.

A coil of wire with the length of p cm is cut into 32 parts such that their lengths form an arithmetic progression. It is given that the length of the longest part is 105 cm and the sum of the lengths of the three shortest parts is 45 cm.

- (a) Cari panjang, dalam cm, bagi bahagian yang terpendek.

Find the length, in cm, of the shortest part.

[4 markah]

[4 marks]

- (b) Seterusnya, hitung nilai p .

Hence, calculate the value of p .

[2 markah]

[2 marks]

Jawapan / Answer:

- 4 (a) Permudahkan $8^{x-1} \div 32^x$ ke dalam bentuk $\frac{1}{p(2^{nx})}$ dengan keadaan p dan n ialah integer.

Simplify $8^{x-1} \div 32^x$ into the form of $\frac{1}{p(2^{nx})}$ such that p and n are integers.

[3 markah]

[3 marks]

- (b) Sebuah silinder mempunyai jejari $\frac{1}{(\sqrt{2}-1)}$ cm dan tinggi h cm. Diberi bahawa isi padu silinder itu ialah $\pi(7 + 5\sqrt{2}) \text{ cm}^3$. Hitung nilai bagi h dalam sebutan $a + \sqrt{b}$.

A cylinder has a radius of $\frac{1}{(\sqrt{2}-1)}$ cm and height of h cm. It is given that the volume of the cylinder is $\pi(7 + 5\sqrt{2}) \text{ cm}^3$. Calculate the value of h in terms of $a + \sqrt{b}$.

[3 markah]

[3 marks]

Jawapan / Answer:

Jawapan / Answer:

[Blank area for answer]

- 5 Diberi bahawa satu garis lurus $y = mx - m$ bersilang dengan lengkung $y = 2x^2 + 3x - 3$ pada dua titik yang berbeza, cari julat nilai bagi m .

It is given that a straight line $y = mx - m$ intersects the curve $y = 2x^2 + 3x - 3$ at two different points, find the range of values of m .

[4 markah]

[4 marks]

Jawapan / Answer:

HALAMAN KOSONG

- 6 Seorang pemain golf memukul bola golf 3 m di sebelah kiri lubang A. Locus bola golf itu diberi oleh $f(x) = -\frac{1}{2}x^2 + px + 2q$ dengan keadaan p, q ialah pemalar dan x ialah sesaran mengufuk bola golf dari lubang A. Bola golf itu jatuh ke padang semula pada jarak 10 m ke kanan dari tempat bola itu dipukul.

A golf player hits a golf ball 3 m on the left side of hole A. The locus of the golf ball is given by $f(x) = -\frac{1}{2}x^2 + px + 2q$ such that p, q are constants and x is the horizontal displacement of the golf ball from hole A. The golf ball falls to the ground again 10 m towards the right from where the ball was hit.

- (a) Cari nilai p dan nilai q .

Find the value of p and of q .

[2 markah]

[2 marks]

- (b) Seterusnya, cari ketinggian maksimum yang dicapai oleh bola golf itu.

Hence, find the maximum height that the golf ball reached.

[2 markah]

[2 marks]

Jawapan / Answer:

Jawapan / Answer:

[Marked 1]
[Marked 2]

- 7 Diberi bahawa $ABCD$ ialah sebuah segi empat selari, dengan keadaan $\vec{BC} = k\underline{i} - \underline{j}$ dan $\vec{CD} = -4\underline{i} + k\underline{j}$. Cari panjang pepenjuru AC dalam sebutan k .

It is given $ABCD$ is a parallelogram, where $\vec{BC} = k\underline{i} - \underline{j}$ and $\vec{CD} = -4\underline{i} + k\underline{j}$. Find the length of the diagonal AC in terms of k .

[3 markah]

[3 marks]

Jawapan / Answer:

HALAMAN KOSONG



Diagram 2

Diagram 2 shows a triangle PQR with a shaded sector QPT. The radius of the sector is 10 cm and the central angle is 60° . The length of the base PR is 16 cm. Find the area of the shaded region.

Diagram 2

(a) Find the area of the shaded region.

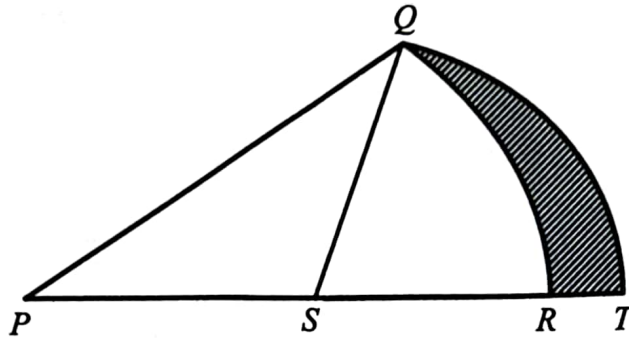
[3 marks]

(b) Find the area of the shaded region.

[3 marks]

- 8 Rajah 8 menunjukkan dua sektor, PQR dan SQT , masing-masing berpusat di P dan S . Jejari bagi sektor PQR dan SQT masing-masing ialah 13.21 cm dan 8 cm.

Diagram 8 shows two sectors, PQR and SQT , with centres P and S respectively. The radii of the sectors PQR and SQT are 13.21 cm and 8 cm respectively.



Rajah 8
Diagram 8

Diberi bahawa S ialah titik tengah bagi garis lurus PRT dan $\angle QPR = 0.6$ radian.

It is given that S is the midpoint of the straight line PRT and $\angle QPR = 0.6$ radian.

Hitung

Calculate

- (a) panjang lengkok, dalam cm, QT ,
the arc length, in cm, of QT ,

[2 markah]
[2 marks]

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

[3 markah]
[3 marks]

Jawapan / Answer:

Jawapan / Answer:

- 9 Diberi bahawa fungsi $f(x) = (x - 3)(x^2 - 9)$.
It is given that function $f(x) = (x - 3)(x^2 - 9)$.

Cari

Find

- (a) fungsi kecerunan $f(x)$,
the gradient function of $f(x)$,

[2 markah]
[2 marks]

- (b) titik-titik pegun bagi $f(x)$ dan tentukan sifat bagi setiap titik pegun,
the stationary points for $f(x)$ and determine the nature of each stationary point,

[3 markah]
[3 marks]

- (c) nilai $f(1.001)$ dengan menggunakan konsep kalkulus.
the value of $f(1.001)$ by using the concept of calculus.

[3 markah]
[3 marks]

Jawapan / Answer:

Jawapan / Answer:

Diagram 11 shows a shaded region bounded by the parabola $y = x^2 - 4x + 4$ and the line $y = 2x$. The region is shaded between the two curves from $x = 0$ to $x = 4$.



Diagram 11
The shaded region is bounded by the parabola $y = x^2 - 4x + 4$ and the line $y = 2x$.

Find
the area of the shaded region.

(a) Find the area of the shaded region.

(b) Find the area of the shaded region.

(c) Find the area of the shaded region.

(d) Find the area of the shaded region.

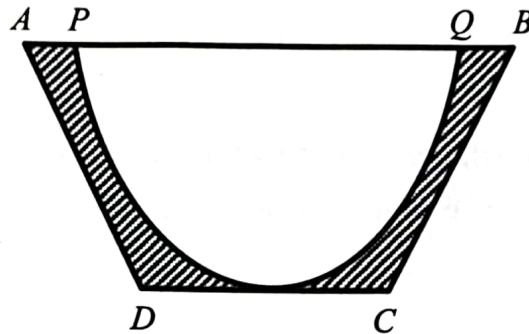
(e) Find the area of the shaded region.

(f) Find the area of the shaded region.

(g) Find the area of the shaded region.

- 10 Rajah 10 menunjukkan keratan rentas bagi satu bekas berbentuk trapezium yang mempunyai permukaan dalaman berbentuk parabola dan penutup yang rata. Permukaan dalam bekas itu diwakili oleh fungsi $y = ax^2$. Diberi bahawa panjang AB dan CD masing-masing ialah 12 cm dan 8 cm, $AP = QB = 1$ cm dan tinggi bekas itu ialah 8 cm.

Diagram 10 shows a cross-sectional of a trapezium shaped container which has a parabolic inner surface and a flat cover. The inner surface of the container represented by the function $y = ax^2$. It is given that the length of AB and CD are 12 cm and 8 cm respectively, $AP = QB = 1$ cm and the height of the container is 8 cm.



Rajah 10
Diagram 10

Cari

Find

- (a) nilai a ,
the value of a ,
[2 markah]
[2 marks]
- (b) luas, dalam cm^2 , bagi rantau berlorek,
the area, in cm^2 , of the shaded region,
[4 markah]
[4 marks]
- (c) isi padu maksimum beras itu, dalam sebutan π , yang boleh disimpan dalam bekas tersebut jika penutup bekas itu ditutup rapat.
the maximum volume of the rice, in term of π , that can be stored in the container if the cover of the container is tightly closed.
[2 markah]
[2 marks]

Jawapan / Answer:



Diagram 11

(a) Can horizontal path with B.

Point is the lowest of the point A.

[3 marks]

[3 marks]

(b) Is there any line that passes through point P? Can you find the equation of the line?

P is a point such that PD is perpendicular to FC. Find the equation of the line PD.

[3 marks]

[3 marks]

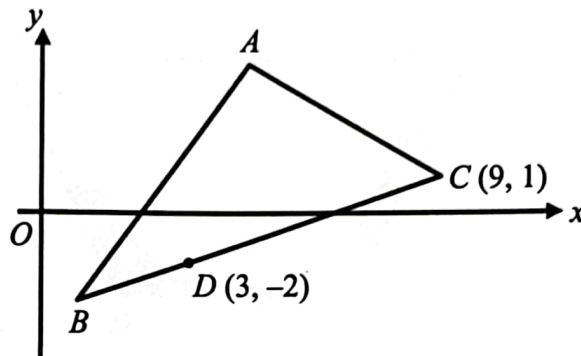
Jawapan / Answer:

11 Penyelesaian secara lukisan berskala tidak diterima.

Solution by scale drawing is not accepted.

Rajah 11 menunjukkan sebuah segi tiga ABC dengan keadaan titik D terletak pada garis lurus BC . Diberi bahawa nisbah bagi luas $\triangle ABD$: luas $\triangle ADC = 1 : 3$.

Diagram 11 shows a triangle ABC where point D lies on the straight line BC . It is given that the ratio of the area of $\triangle ABD$: the area of $\triangle ADC = 1 : 3$.



Rajah 11
Diagram 11

- (a) Cari koordinat bagi titik B .

Find the coordinates of the point B .

[3 markah]

[3 marks]

- (b) P ialah satu titik yang bergerak dengan keadaan PD sentiasa berserenjang dengan PC . Cari persamaan lokus bagi titik P .

P is a moving point such that PD is always perpendicular to PC . Find the equation of the locus of point P .

[2 markah]

[2 marks]

Jawapan / Answer:

Jawapan / Answer:



Figure 1
Figure 2

Two straight lines are shown in Figure 1 and Figure 2. Find the number of solutions of the system of linear equations represented by the two lines.

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[Lihat halaman sebelah

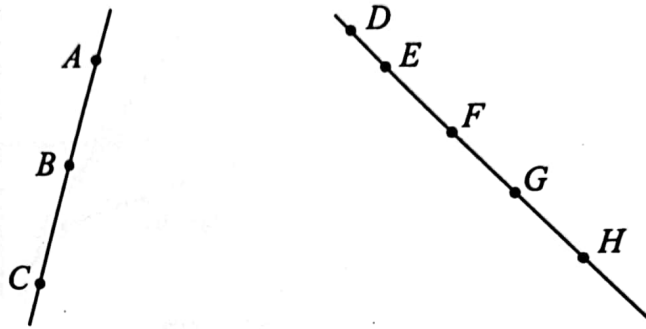
- 12 (a) Jika ${}^{30}C_r = {}^{30}C_{r+4}$, cari nilai r .
 If ${}^{30}C_r = {}^{30}C_{r+4}$, find the value of r .

[2 markah]

[2 marks]

- (b) Rajah 12 menunjukkan dua garis lurus. Titik-titik A , B dan C terletak pada garis lurus yang pertama manakala titik-titik D , E , F , G dan H terletak pada garis lurus yang kedua.

Diagram 12 shows two straight lines. Points A , B and C lie on the first straight line where points D , E , F , G and H lie on the second straight line.



Rajah 12
 Diagram 12

Cari bilangan segi tiga atau segi empat yang boleh dibentuk.

Find the number of triangles or quadrilaterals can be formed.

[3 markah]

[3 marks]

- (c) Cari bilangan nombor genap di antara 3 000 dengan 7 000 yang boleh dibentuk dengan menggunakan digit 2, 3, 4, 5, 6, 7 tanpa pengulangan.

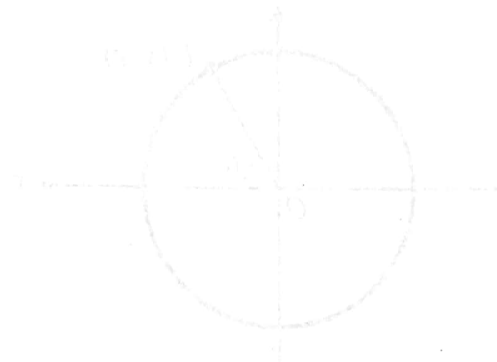
Find the number of even number in between 3 000 and 7 000 that can be formed by using the digits 2, 3, 4, 5, 6, 7 without repetition.

[3 markah]

[3 marks]

Jawapan / Answer:

Jawapan / Answer:



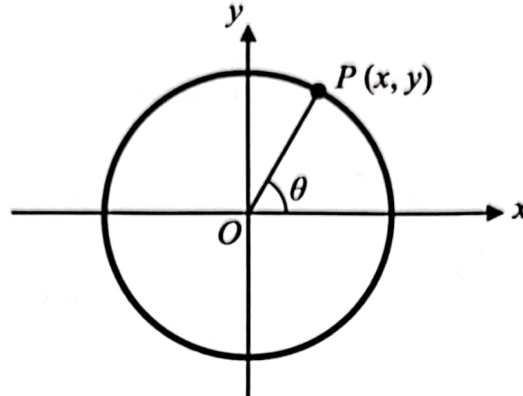
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Bahagian B

[16 markah]

Bahagian ini mengandungi tiga soalan. Jawab dua soalan.

- 13 (a) Rajah 13 menunjukkan satu titik P yang terletak pada lilitan suatu bulatan unit.

Diagram 13 shows a point P lies on the circumference of an unit circle.

Rajah 13
Diagram 13

Berdasarkan rajah tersebut,

Based on the diagram,

- (i) terbitkan identiti asas trigonometri $\sin^2 \theta + \cos^2 \theta = 1$.

derive the basic trigonometric identity $\sin^2 \theta + \cos^2 \theta = 1$.

- (ii) cari nilai $\cos 2\theta$ jika $x = 0.1736$.

find the value of $\cos 2\theta$ if $x = 0.1736$.

[4 markah]

[4 marks]

- (b) Diberi bahawa $\tan A = 3$ dan $\tan (A - B) = \frac{2}{3}$, dengan keadaan A ialah sudut refleks dan B ialah sudut tirus.

It is given that $\tan A = 3$ and $\tan (A - B) = \frac{2}{3}$, where A is a reflex angle and B is an acute angle.

Cari

Find

- (i) $\cot A$,
 $\cot A$,

- (ii) nilai bagi $\tan B$.
the value of $\tan B$.

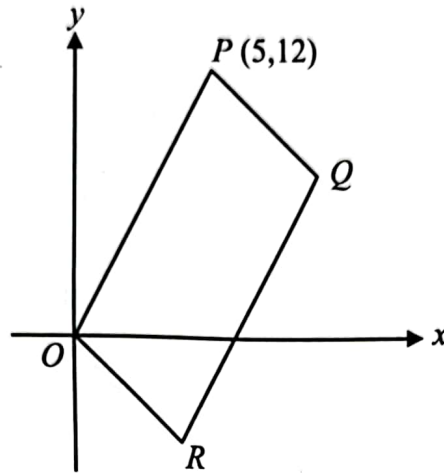
[4 markah]

[4 marks]

Jawapan / Answer:

- 14 Rajah 14 menunjukkan kedudukan empat robot penyembur racun perosak yang terletak pada satah Cartes di titik O , P , Q dan R . Diberi bahawa $OPQR$ membentuk satu segi empat selari dan $\vec{PR} = -\underline{i} - 15\underline{j}$.

Diagram 14 shows four position of pesticide spraying robots on the Cartesian plane at point O , P , Q and R . It is given that $OPQR$ forms a parallelogram and $\vec{PR} = -\underline{i} - 15\underline{j}$.



Rajah 14
Diagram 14

(a) Cari

Find

- (i) nilai $|\vec{OP} - \vec{QP} + \vec{QR} - \vec{OR}|$,
the value of $|\vec{OP} - \vec{QP} + \vec{QR} - \vec{OR}|$,

- (ii) koordinat titik Q .
the coordinates of point Q .

[5 markah]

[5 marks]

- (b) Robot di titik P bergerak ke titik $T(2, 6)$ dengan halaju malar $(-5\underline{i} + w\underline{j}) \text{ m s}^{-1}$. Ia mengambil masa t saat untuk sampai ke titik T .

Robot at point P moves to point $T(2, 6)$ with a constant velocity $(-5\underline{i} + w\underline{j}) \text{ m s}^{-1}$. It takes t seconds to reach point T .

- (i) Berdasarkan maklumat yang diberi, tulis satu persamaan vektor dalam sebutan t dan w ,

Based on the given information, write a vector equation in terms of t and w ,

- (ii) Seterusnya, cari nilai t dan nilai w .

Hence, find the value of t and of w .

[3 markah]

[3 marks]

Jawapan / Answer:



Diagram 17
(Diagram 17)

(a) (i) The graph of the function $y = f(x)$ is shown in Diagram 17. Find the range of the function $y = f(x)$.

(ii) The function $y = f(x)$ is defined by

show the value of $f(1)$.

[5 marks]
[5 marks]

(b) (i) The function $y = f(x)$ is defined by

find the value of $f(1)$.

or

find

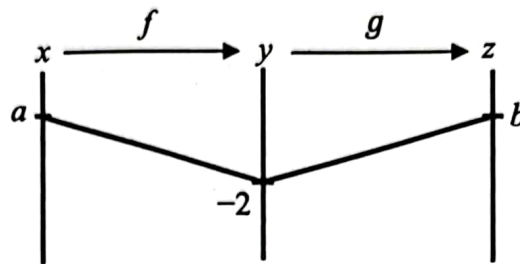
(c) Find the value of a .

(d) Find the value of a .

[5 marks]
[5 marks]

- 15 Rajah 15 menunjukkan fungsi f yang memetakan x kepada y dan fungsi g yang memetakan y kepada z .

Diagram 15 shows function f that maps x onto y and function g that maps y onto z .



Rajah 15
Diagram 15

- (a) (i) Ungkapkan dalam sebutan f dan g bagi fungsi yang memetakan x kepada z .
Express in terms of f and g of the function that maps x onto z .

- (ii) Nyatakan nilai $g^{-1}g(-2)$.
State the value of $g^{-1}g(-2)$.

[2 markah]
[2 marks]

- (b) Diberi bahawa $f^{-1}(x) = \frac{2x+3}{x-2}$, $x \neq 2$ dan $gf(x) = 3x - 6$,

It is given that $f^{-1}(x) = \frac{2x+3}{x-2}$, $x \neq 2$ and $gf(x) = 3x - 6$,

cari

find

- (i) nilai a ,
the value of a ,
- (ii) $g(x)$.

[6 markah]
[6 marks]

Jawapan / Answer: