

3472/1

MATEMATIK

TAMBAHAN

KERTAS 1

2 JAM

NAMA: .....

TINGKATAN: .....



MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)  
NEGERI PERAK

MODUL KECEMERLANGAN SPM 2023  
SET 1

## MATEMATIK TAMBAHAN

KERTAS 1

2 JAM

**JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU**

1. Tulis nama dan kelas anda pada ruangan 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 sama ada dalam Bahasa Melayu atau Bahasa Inggeris.

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

## SENARAI RUMUS

- 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  $T_n = ar^{n-1}$
- 11  $S_n = \frac{n}{2}[2a + (n-1)d]$
- 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*  
 $\int_a^b x \, dy$  atau (or)  $\int_a^b y \, dx$
- 18 Isi padu kisanan  
*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  $\bar{I} = \frac{\sum W_i I_i}{\sum W_i}$
- 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 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  $\sin^2 A + \cos^2 A = 1$
- 30  $\sec^2 A = 1 + \tan^2 A$   
 $\csc^2 A = 1 + \cot^2 A$
- 31  $\operatorname{cosec}^2 A = 1 + \cot^2 A$
- 32  $\sin 2A = 2 \sin A \cos A$   
 $\sin 2A = 2 \sin A \cos A$

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

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

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

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

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

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

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

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

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

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

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

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

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

**Bahagian A****Section A**

[64 markah]

[64 marks]

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

- 1 Tentukan had bagi fungsi yang berikut :

$$\text{had}_{x \rightarrow -2} \frac{x+2}{\sqrt{5x+14}-2}$$

*Find the value of the following limit :*

$$\lim_{x \rightarrow -2} \frac{x+2}{\sqrt{5x+14}-2}$$

[4 markah]

[4 marks]

**Jawapan / Answer :**

- 2 Bilangan gabungan 3 benda daripada  $n$  benda berlainan adalah empat kali bilangan gabungan 2 benda daripada  $n - 2$  benda. Carikan nilai  $n$ .

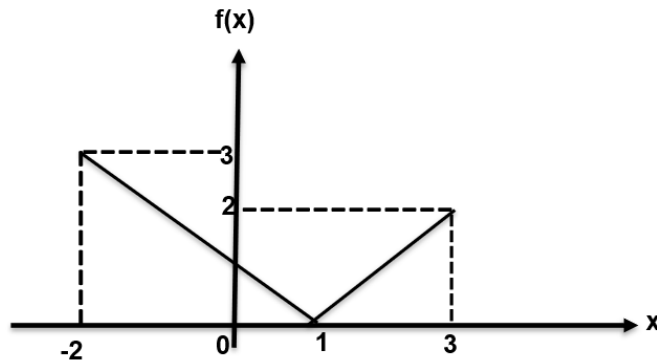
*The number of combinations of 3 things out of  $n$  different things is four times the number of combinations of 2 things out of  $n - 2$  things. Find the value of  $n$ .*

[3 markah]

[3 marks]

**Jawapan / Answer :**

- 3 Rajah 1 menunjukkan suatu graf fungsi nilai mutlak.  
Diagram 1 below shows absolute value function graph.



Rajah 1  
Diagram 1

- (a) (i) lengkapkan jadual 1 dibawah berdasarkan graf fungsi nilai mutlak diatas.  
complete the table 1 below based on the absolute value function graph above.

$x$			
$f(x)$			

Jadual 1  
Table 1

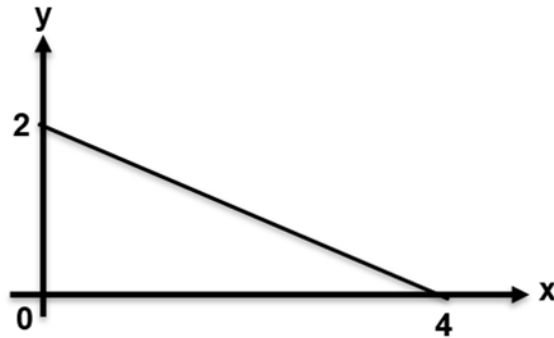
- (ii) ungkapkan fungsi tersebut dalam bentuk tatanda fungsi.  
express the function in a form of function notation. [1 markah] [1 mark]
- (iii) nyatakan julat yang sepadan.  
state the corresponding range. [1 markah] [1 mark]
- (b) Fungsi  $f$  ditakrifkan oleh  $h:x \rightarrow \frac{1}{2x}, x \neq 0$ , cari ungkapan bagi  $h^2(x), h^3(x), h^4(x)$   
The function  $f$  is defined by  $h:x \rightarrow \frac{1}{2x}, x \neq 0$ , find the expressions for  $h^2(x), h^3(x), h^4(x)$  [3 markah] [3 marks]

**Jawapan / Answer :**

**Ruangan Jawapan Soalan 3 / Answer Space For Question 3**

- 4 Rajah 2 menunjukkan garis lurus penyuaiian terbaik yang diperoleh dengan memplot graf  $y$  melawan  $x$ .

*Diagram 2 shows a line of best fit obtained by plotting the graph of  $y$  against  $x$ .*



Rajah 2  
Diagram 2

Cari  
*find*

- (a) persamaan garis lurus penyuaiian terbaik tersebut.  
*the equation of the line of best fit.*

[2 markah]  
[2 marks]

- (b) nilai  $x$  apabila  $y = 4$ .  
*the value of  $x$ , when  $y = 4$ .*

[2 markah]  
[2 marks]

**Jawapan / Answer :**



- 5 Jadual berikut menunjukkan senarai fungsi  $\frac{m}{x^n}$  dan kamiran tak tentu masing-masing dengan keadaan  $m$  ialah pemalar dan  $n = 2, 3, 4, 5, \dots$

The following table shows a list of the functions  $\frac{m}{x^n}$  and their respective indefinite integrals where  $m$  is a constant and  $n = 2, 3, 4, 5, \dots$

$\int \frac{m}{x^n} dx$	$y$	$y$
$\int \frac{m}{x^2} dx$	$-\frac{m}{x} + c$	$-\frac{m}{(2-1)x^{2-1}} + c$
$\int \frac{m}{x^3} dx$	$-\frac{m}{2x^2} + c$	$-\frac{m}{(3-1)x^{3-1}} + c$
$\int \frac{m}{x^4} dx$	$-\frac{m}{3x^3} + c$	
$\int \frac{m}{x^5} dx$	$-\frac{m}{4x^4} + c$	

Jadual 2  
Table 2

Merujuk kepada corak yang ditunjukkan dalam jadual,  
Refer to the pattern shown in the table,

- (a) (i) lengkapkan jadual tersebut.  
complete the table.

[2 markah]  
[2 marks]

- (ii) deduksikan rumus kamiran tak tentu bagi fungsi  $\frac{m}{x^n}$  secara induktif.  
deduce the formula of the indefinite integral of the function  $\frac{m}{x^n}$  by induction.

[1 markah]  
[1 mark]

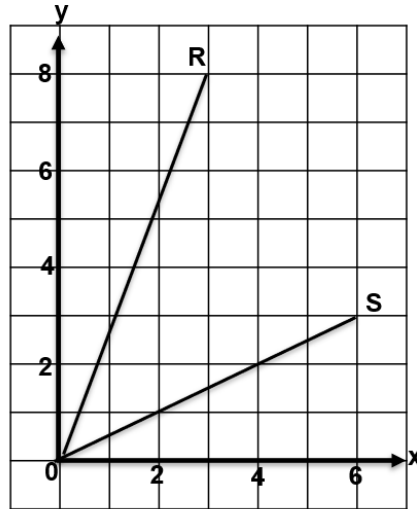
- (b) Seterusnya, cari  $\int \frac{2}{x^2} dx$ .

[3 markah]  
[3 marks]

**Jawapan / Answer :**

**Ruangan Jawapan Soalan 5 / Answer Space For Question 5**

- 6 Rajah 3 menunjukkan dua vektor  $\vec{OR}$  dan  $\vec{OS}$  yang diplot pada satah cartes.  
The diagram 3 shows two vector  $\vec{OR}$  and  $\vec{OS}$  plotted on a cartesian plane,



Rajah 3  
Diagram 3

- (a) Lukis vektor paduan bagi  $\vec{SR}$  pada rajah 3 dengan arah vektor yang betul.  
Draw resultant vector of  $\vec{SR}$  on the diagram 3 with the correct vector direction.

[2 markah]  
[2 marks]

- (b) Seterusnya, cari vektor unit dalam arah  $\vec{SR}$ .  
Hence, find the unit vector in the direction of  $\vec{SR}$ .

[2 markah]  
[2 marks]

**Jawapan / Answer :**

- 7 (a) (i) Diberi suatu jangjang geometri dengan sebutan-sebutan  $a, ar, ar^2, ar^3, \dots, ar^{n-2}, ar^{n-1}$  dengan  $r < 1$  dan hasil tambah  $n$  sebutan pertama ialah  $S_n$ .  
Terbitkan rumus hasil tambah  $n$  sebutan pertama,  $S_n$  bagi jangjang geometri.  
*Given a geometric progression with terms  $a, ar, ar^2, ar^3, \dots, ar^{n-2}, ar^{n-1}$  where  $r < 1$  and the sum of first  $n$  terms is  $S_n$ .  
Derive the formula for the sum of the first  $n$  terms  $S_n$  for the geometric progression.*
- [2 markah]  
[2 marks]
- (ii) Seterusnya, cari hasil tambah dari sebutan keenam hingga sebutan kelapan jangjang geometri 64, 32, 16, .....
- Hence, find the sum from the sixth terms to the eighth term of geometric progression 64, 32, 16, .....*
- [2 markah]  
[2 marks]
- (b) Jisim beberapa rod besi disusun secara menaik mengikut jangjang geometri. Jisim rod yang keenam adalah sama dengan hasil darab jisim rod kedua dan jisim rod keempat. Jika jisim rod besi yang kelapan ialah 256 g, cari jisim rod besi yang paling ringan.  
*There are a few iron rods with their mass arranged according to the ascending order of a geometric progression. The mass of the sixth rod is equal to the product of the second and fourth rods. If the mass of the eighth rod is 256 g, find the mass of the lightest iron rod.*
- [3 markah]  
[3 marks]

**Jawapan / Answer :**

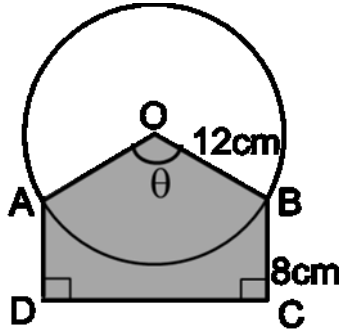
**Ruangan Jawapan Soalan 7 / Answer Space For Question 7**

- 8 (a) Andaikan bahawa  $x = a^p$ , buktikan hukum kuasa logaritma iaitu  $\log_a x^n = n \log_a x$ .  
*Given that  $x = a^p$ , prove that the basic power law of logarithm which is  $\log_a x^n = n \log_a x$*   
 [3 markah]  
 [3 marks]
- (b) Jika suatu pancaran cahaya yang mempunyai keamatan  $I$  diunjurkan secara menegak ke bawah ke dalam air, keamatannya  $I(x)$  pada kedalaman  $x$  meter diberi oleh  
 $I(x) = I_0 e^{-1.4x}$ .  
*If a beam of light that has intensity  $I$  is projected vertically downward into water, then its intensity  $I(x)$  at the depth of  $x$  meter is  $I(x) = I_0 e^{-1.4x}$ .*  
 Pada kedalaman berapakah keamatannya adalah separuh daripada permukaan air?  
*At what depth is the intensity half its value at the surface?*  
 [4 markah]  
 [4 marks]

**Jawapan / Answer :**

- 9 (a) Rajah 4 menunjukkan sebuah bulatan dengan pusat O dan berjajari 12 cm, Titik A dan B terletak atas lilitan bulatan dan membentuk sebuah segi empat tepat dengan titik C dan D. Perimeter rantau berlorek ialah 60.72 cm. Cari sudut  $\theta$  dalam radian.

*Diagram 4 shows a circle, centre O, radius 12 cm. The point A and B lies on the circumference of the circle and form a rectangle with point C and D. The perimeter of the shaded region is 60.72 cm. Find the angle  $\theta$  in radians.*



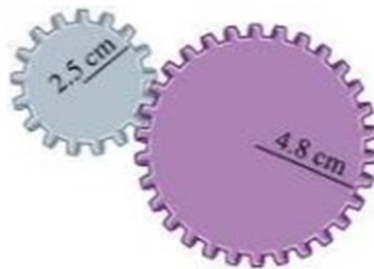
Rajah 4  
Diagram 4

[3 markah]

[3 marks]

- (b) Rajah 5 menunjukkan dua gear masing-masing dengan jejari 2.5 cm dan 4.8 cm di dalam sebuah mesin. Dua gear itu diselaraskan supaya gear kecil memandu putaran gear besar.

*Diagram 5 shows two gear with radius 2.5 cm and 4.8 cm respectively in a machine. The two gears are adjusted so that the smaller gear drives the larger one.*



Rajah 5  
Diagram 5

Jika gear kecil berputar melalui sudut  $225^\circ$ , cari luas sektor yang disurih oleh gear besar apabila ia berputar.

*If the smaller gear rotates through an angle of  $225^\circ$ , find the area of sector swept through by the larger gear when it rotates.*

[4 markah]

[4 marks]

**Jawapan / Answer :**

**Ruangan Jawapan Soalan 9 / Answer Space For Question 9**



- 10 (a) Jika  $\alpha$  dan  $\beta$  ialah punca bagi persamaan kuadratik  $2x^2 + 2x - 3 = 0$ , cari persamaan kuadratik dengan punca  $\frac{2}{\alpha}$  dan  $\frac{2}{\beta}$ .

*If  $\alpha$  and  $\beta$  are the roots of the quadratic equation  $2x^2 + 2x - 3 = 0$ , find the quadratic equation with roots  $\frac{2}{\alpha}$  and  $\frac{2}{\beta}$ .*

[3 markah]

[3 marks]

- (b) Diberi  $f(x) = 2x^2 + ax + 30$  dan  $f(x) < 0$  jika  $3 < x < b$ . Cari nilai  $a$  dan  $b$ .

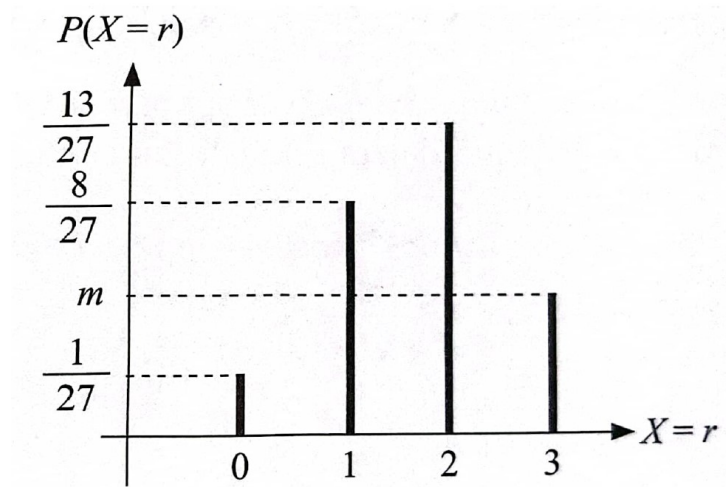
*Given that  $f(x) = 2x^2 + ax + 30$  and  $f(x) < 0$  if  $3 < x < b$ . Find the value of  $a$  and  $b$ .*

[3 markah]

[3 marks]

**Jawapan / Answer :**

- 11 Rajah 6 menunjukkan graf bagi satu taburan binomial  $X$ ,  $X \sim (n,p)$   
*The diagram 6 shows the graph of a binomial distribution of  $X$ ,  $X \sim (n,p)$*



Rajah 6  
 Diagram 6

Cari  
 Find

- (a) nilai  $m$  dan  $p$ .  
*the value of  $m$  and  $p$ .*
- (b) seterusnya cari nilai  $P(X < 3)$ .  
*hence, find the value of  $P(X < 3)$ .*

[3 markah]  
 [3 marks]

[2 markah]  
 [2 marks]

**Jawapan / answer :**

- 12 Koordinat titik-titik A dan B adalah  $(h, 0)$  dan  $(h, R)$  manakala O adalah titik asalan. Segitiga OAB dikisarkan 4 sudut tegak pada paksi-x. Tunjukkan dengan pengamiran bahawa isipadu untuk kon tegak membulat yang terhasil adalah  $\frac{1}{3}\pi R^2 h$ . Diberi bahawa  $h = R$ . Cari nilai

R jika isipadu untuk kon tersebut adalah  $9\pi$ .

Points A and B have coordinates  $(h, 0)$  and  $(h, R)$  while O is the origin. The triangular region OAB is rotated through four right angles about the x-axis. Show by integration that the volume of the right circular cone formed is  $\frac{1}{3}\pi R^2 h$ . Given that  $h = R$ . Find the value of R if the volume of the circular cone is  $9\pi$

[ 5 markah ]

[ 5 marks ]

**Jawapan / Answer :**

**Bahagian B****Section B**

[16 Markah]

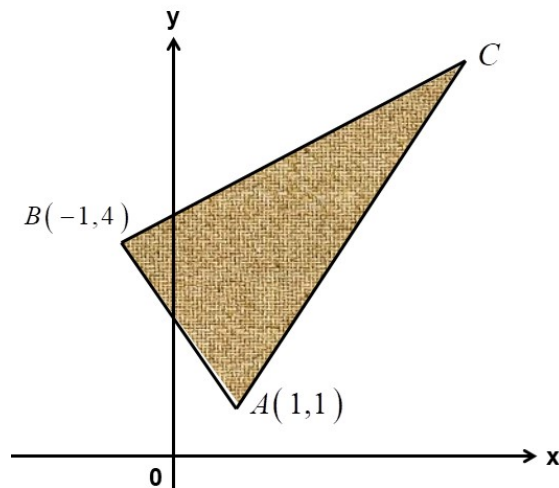
[16 *markah*]Jawab mana-mana **dua** soalan daripada bahagian ini.*Answer any two questions from this section.*

- 13 Penyelesaian secara lukisan berskala **tidak** diterima.

*Solution by scale drawing is not accepted.*

Rajah 7 menunjukkan sebuah tanah kebun durian Razid yang berbentuk segi tiga  $ABC$  dengan  $A(1,1)$  dan  $B(-1,4)$ . Garis Lurus  $AB$ ,  $AC$  dan  $BC$  adalah garisan sempadan bagi tanah kebun Razid.

Diagram 7 shows a Razid's durian orchard in the shape of a triangle  $ABC$  with  $A(1,1)$  and  $B(-1,4)$ . Straight lines  $AB$ ,  $AC$  and  $BC$  are the boundary lines for Razid's durian orchard.



Rajah 7  
Diagram 7

Kecerunan  $AB$ ,  $AC$  dan  $BC$  masing-masing ialah  $-\frac{3}{2}$ ,  $\frac{3}{2}$  dan  $\frac{1}{2}$ .

The gradients of  $AB$ ,  $AC$  and  $BC$  are respectively  $-\frac{3}{2}$ ,  $\frac{3}{2}$  and  $\frac{1}{2}$ .

- (a) (i) cari koordinat  $C$ .  
*find the  $C$  coordinate.*
- (ii) Razid ingin membina pondok rehat di koordinat  $(3,4)$ . Bolehkah pondok itu di bina dan berikan justifikasi anda.  
*Razid wants to build a rest hut in the coordinate  $(3,4)$ . Can the hut be built and give your justification.*

[5 markah]

[5 marks]

- (b) Satu lampu solar akan diletakkan di koordinat  $(1,3)$ . Cahaya lampu solar itu mampu menerangi sejauh 1 unit daripada tiang lampu itu. Apakah bentuk lokus bagi cahaya lampu itu dan seterusnya cari persamaan lokus bagi cahaya lampu solar itu.

*A solar lamp will be placed at the coordinates  $(1,3)$ . The light of the solar lamp is able to illuminate as far as 1 unit from the lamp post. What is the shape of the locus of the light of the lamp and hence, find the equation of the locus of the light of the solar lamp.*

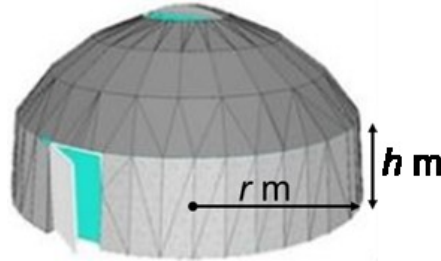
[3 markah]

[3 marks]

**Jawapan / Answer :**

**Ruangan Jawapan Soalan 13 / Answer Space For Question 13**

- 14 Sebuah yurt dibina dengan bentuk hemisfera di atas suatu silender yang berjari  $r$  m. Diberi bahawa jumlah kain yang digunakan pada lapisan luar yurt ialah  $216\pi$  m<sup>2</sup>.  
*A yurt is built with a hemisphere on top of a cylinder of radius  $r$  m. Given that the total fabric used as the outer layer of the yurt is  $216\pi$  m<sup>2</sup>*



Rajah 8  
 Diagram 8

- (a) Tunjukkan bahawa isipadu yurt,  $V$  m<sup>3</sup> diberi oleh  $V = 108\pi r - \frac{1}{3}\pi r^3$   
*Show that the volume of the yurt,  $V$  m<sup>3</sup> is given by  $V = 108\pi r - \frac{1}{3}\pi r^3$*  [2 markah]  
 [2 marks]
- (b) Cari nilai  $r$  supaya  $V$  adalah maksimum.  
*Find the value of  $r$  for  $V$  to be maximum.* [3 markah]  
 [3 marks]
- (c) Seterusnya, cari jumlah kos, dalam RM, jika kos kanvas khas yang digunakan untuk menutup permukaan hemisfera ialah RM 15 per m<sup>2</sup>. Bundarkan jawapan anda kepada Ringgit terdekat.  
*Hence, find the total cost, in RM, if the cost of a special type of canvas used to cover the area of the hemisphere is RM 15 per m<sup>2</sup>. Round off your answer to the nearest Ringgit.* [3 markah]  
 [3 marks]

**Jawapan / Answer :**

**Ruangan Jawapan Soalan 14 / Answer Space For Question 14**



- 15 (a) Buktikan identiti trigonometri berikut

*Prove the following trigonometric identity*

$$\tan\left(\theta + \frac{\pi}{4}\right) = \frac{1 + \tan\theta}{1 - \tan\theta}$$

[4 markah]

[4 marks]

- (b) Seterusnya, cari nilai  $\tan \frac{11\pi}{12}$ . Tulis jawapan anda dalam bentuk  $(a + b\sqrt{3})$

*Hence, find the value of  $\tan \frac{11\pi}{12}$ . Write your answer in the form of  $(a + b\sqrt{3})$*

[4 markah]

[4 marks]

**Jawapan / Answer :**

**Ruangan Jawapan Soalan 15 / *Answer Space For Question 15***

**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										Tolak / Minus									
	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

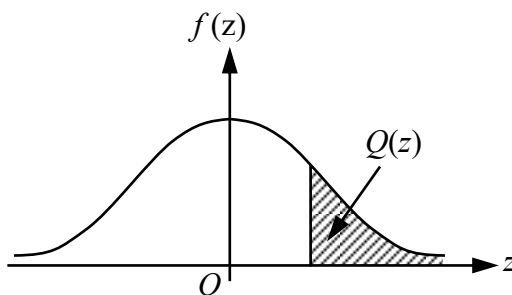
Bagi z negatif guna hubungan:

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

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

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