

SULIT

3472/1

NO. KAD PENGENALAN

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ANGKA GILIRAN

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**SOALAN PRAKTIS BESTARI**  
**PROJEK JAWAB UNTUK JAYA (JUU) 2017**



**SIJIL PELAJARAN MALAYSIA**

**3472/1**

**ADDITIONAL MATHEMATICS**

**Kertas 1 / Set 1**

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	4	
6	2	
7	3	
8	3	
9	3	
10	4	
11	3	
12	3	
13	4	
14	4	
15	3	
16	3	
17	4	
18	3	
19	3	
20	3	
21	4	
22	3	
23	4	
24	3	
25	4	
Jumlah	80	

Kertas soalan ini mengandungi 29 halaman bercetak

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

## ALGEBRA

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

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

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

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

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

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

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

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

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

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

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

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

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

## CALCULUS

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

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

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

$$4. \text{Area under a curve} = \int_a^b y \, dx \quad \text{or} \\ = \int_a^b x \, dy$$

$$5. \text{Volume generated} \\ = \int_a^b \pi y^2 \, dx \quad \text{or} \\ = \int_a^b \pi x^2 \, dy$$

## GEOMETRY

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

2. Midpoint

$$(x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$3. |r| = \sqrt{x^2 + y^2}$$

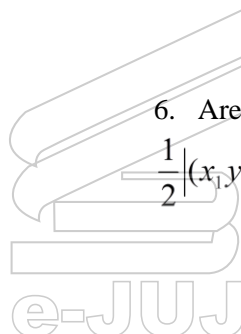
$$4. \hat{r} = \frac{xi + yj}{\sqrt{x^2 + y^2}}$$

5. A point dividing a segment of a line

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

6. Area of triangle =

$$\frac{1}{2} |(x_1y_2 + x_2y_3 + x_3y_1) - (x_2y_1 + x_3y_2 + x_1y_3)|$$



**STATISTICS**

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

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

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

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

5.  $m = L + \left[ \frac{\frac{1}{2}N - F}{f_m} \right] C$

7.  $\bar{I} = \frac{\sum w_1 I_1}{\sum w_1}$

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

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

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

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

12. Mean  $\mu = np$

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

14.  $z = \frac{x - \mu}{\sigma}$

**TRIGONOMETRY**

1. Arc length,  $s = r\theta$

2. Area of sector,  $L = \frac{1}{2}r^2\theta$

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

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

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

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

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

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

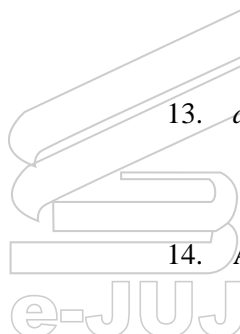
10.  $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

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

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

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

14. Area of triangle =  $\frac{1}{2}ab \sin C$

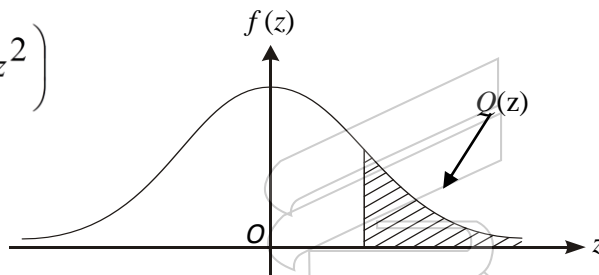


**THE UPPER TAIL PROBABILITY  $Q(z)$  FOR THE NORMAL DISTRIBUTION  $N(0,1)$   
 KEBARANGKALIAN HUJUNG ATAS  $Q(z)$  BAGI TABURAN NORMAL  $N(0, 1)$**

z	0	1	2	3	4	5	6	7	8	9	Minus / Tolak								
											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  $P(X > k) = Q(k)$

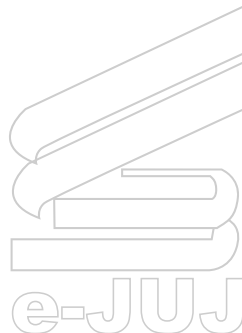
- 1 Function  $f$  is defined as  $f : x \rightarrow 2x^2 + x - 5$  with domain  $x = \{-3, 0, 2\}$ . Find the images of  $f$  corresponding to the given domain.

*Fungsi  $f$  ditakrifkan sebagai  $f : x \rightarrow 2x^2 + x - 5$  dengan domain  $x = \{-3, 0, 2\}$ . Cari imej bagi  $f$  sepadan dengan domain yang diberi.*

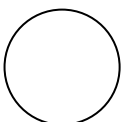
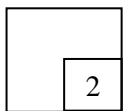
[2 marks]  
[2 markah]

Answer / Jawapan:

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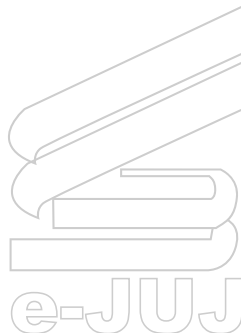
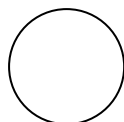
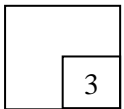
Given the function  $f : x \rightarrow \frac{m}{x} - 3, x \neq 0$  and  $f^{-1} : x \rightarrow \frac{10}{x+k}, x \neq -k$ , where  $m$  and  $k$  are constants, find the value of  $m$  and of  $k$ .

Diberi fungsi  $f : x \rightarrow \frac{m}{x} - 3, x \neq 0$  dan  $f^{-1} : x \rightarrow \frac{10}{x+k}, x \neq -k$ , dimana  $m$  dan  $k$  adalah pemalar, cari nilai bagi  $m$  dan nilai  $k$ .

[3 marks]  
[3 markah]

Answer / Jawapan:

2



3 Given that  $h(x) = \frac{1}{x-5}, x \neq 5$  and  $hg(x) = \frac{1}{x-3}, x \neq 3$ . Cari ,

Diberi  $h(x) = \frac{1}{x-5}, x \neq 5$  dan  $hg(x) = \frac{1}{x-3}, x \neq 3$ . Find ,

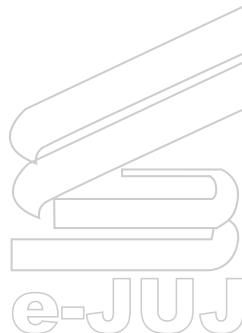
- (a)  $g(x)$   
 (b) the value of  $x$  when  $g(x) = -2$   
 nilai  $x$  apabila  $g(x) = -2$

[3 marks]  
 [3 markah]

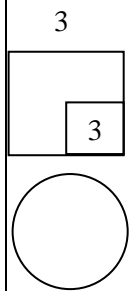
Answer / Jawapan:

(a)

(b)



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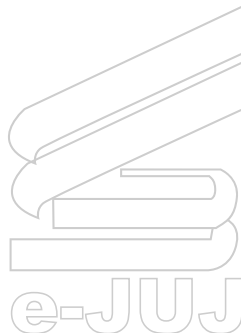
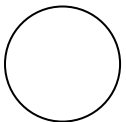
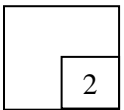
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Examiner's  
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- 4 The quadratic equations  $-3x - p + 3x^2 = 0$  has no real roots. Find the range values of  $p$ .  
*Persamaan kuadratik  $-3x - p + 3x^2 = 0$  tiada punca nyata. Cari julat nilai  $p$ .*

[2 marks]  
[2 markah]

Answer / Jawapan:

4





5

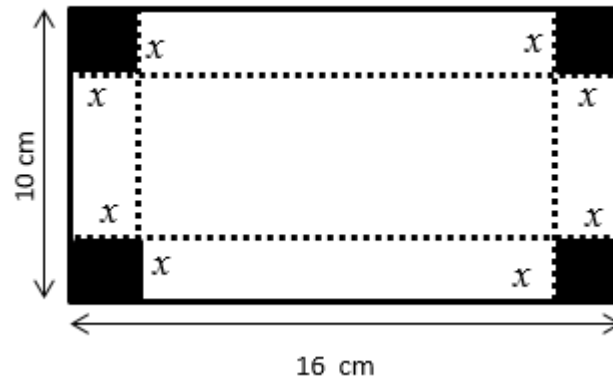


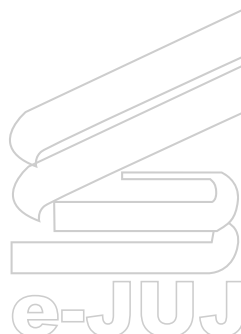
Diagram 5  
Rajah 5

From a rectangular sheet of metal, as shown in the diagram 5, four squares, each of side  $x$  cm, are cut from every corner. The remaining sheet of metal is folded up along the dotted lines to form a tray. If the volume of the tray formed is  $(4x^3 + 112) \text{ cm}^3$ . Find the possible value of  $x$ .

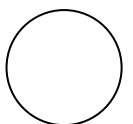
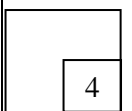
*Dari kepingan logam berbentuk segi empat tepat, seperti yang ditunjukkan dalam rajah 5 di atas, empat segi empat sama, setiap sisi  $x$  cm, dipotong dari setiap sudut. Baki kepingan logam dilipat sepanjang garis putus-putus untuk membentuk dulang. Jika isipadu dulang yang terbentuk ialah  $(4x^3 + 112) \text{ cm}^3$ . Cari nilai yang mungkin bagi  $x$ .*

[4 marks]  
[4 markah]

Answer / Jawapan:



5



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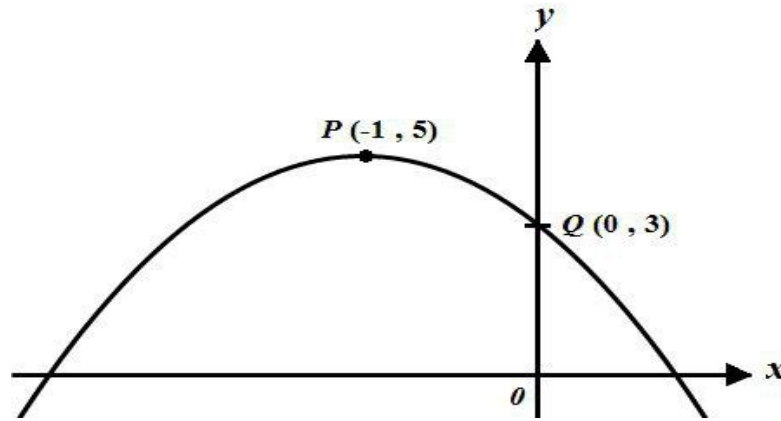


Diagram 6  
Rajah 6

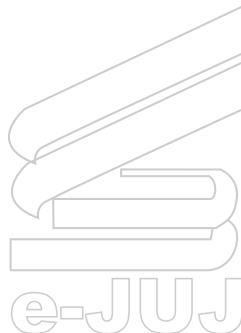
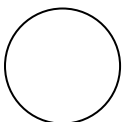
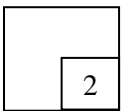
Diagram 6 shows a quadratic function curve  $y = m - a(x - n)^2$  where  $a$ ,  $m$  and  $n$  are constants. The curve has a maximum point at  $P$  and meets the  $y$ -axis at  $Q$ . Find the value of  $m$  and of  $n$ .

Rajah 6 menunjukkan lengkung fungsi kuadratik  $y = m - a(x - n)^2$  di mana  $a$ ,  $m$  dan  $n$  adalah pemalar. Lengkung itu mempunyai titik maksimum pada  $P$  dan bersilang pada paksi- $y$  di titik  $Q$ . Cari nilai bagi  $m$  dan  $n$ .

[2 marks]  
[2 markah]

Answer / Jawapan:

6



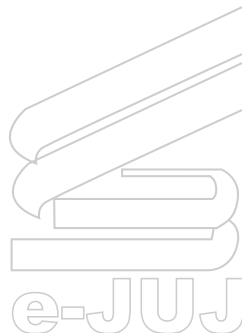
- 7 Solve the equation:  
*Selesaikan persamaan:*

$$4^{\log_3 x} = 64.$$

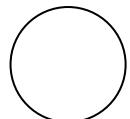
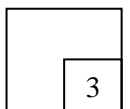
[3 marks]  
[3 markah]

Answer / *Jawapan:*

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7



For  
Examiner's  
Use

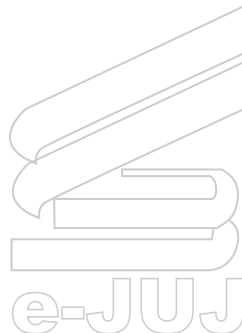
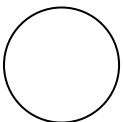
- 8 Solve the equation:  
*Selesaikan persamaan:*

$$\log_3(2t-3) - \log_3(3t) = -2$$

[3 marks]  
[3 markah]

Answer / *Jawapan:*

8



**SULIT****3472/1**

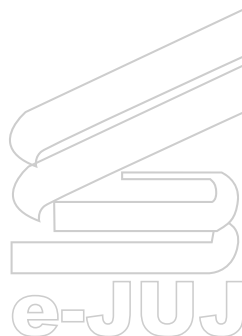
9 If  $\log_a b = x$ , express  $\log_{\frac{1}{a}} b$  in terms of  $x$ .

*Jika  $\log_a b = x$ , ungkapkan  $\log_{\frac{1}{a}} b$  dalam sebutan  $x$ .*

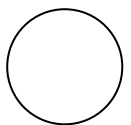
[3 marks]  
[3 markah]

Answer / Jawapan:

*For  
Examiner's  
Use*



9



For  
Examiner's  
Use

10

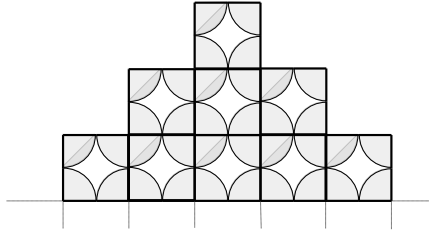


Diagram 10  
Rajah 10

Diagram 10 shows the arrangement of square tile with 2 cm length. The sequence will be continuous and has covered an area of  $0.0484 \text{ m}^2$ . Find the number of tiles in the last row of the sequence.

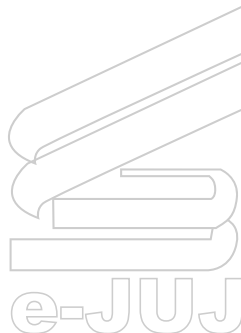
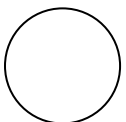
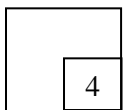
Rajah 10 menunjukkan susunan sebahagian jubin yang berbentuk segi empat sama dan berukuran 2 cm. Susunan tersebut berterusan dan telah menutupi kawasan seluas  $0.0484 \text{ m}^2$ .

Cari bilangan jubin di barisan terakhir untuk susunan tersebut.

[4 marks]  
[4 markah]

Answer / Jawapan:

10



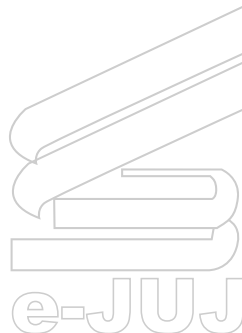
- 11 The first terms of a geometric progression is  $\alpha$  while the difference between the third term and 3 times of the second term are  $10\alpha$  . Find the values of  $r$  .

*Sebutan pertama bagi suatu jangjang geometri adalah  $\alpha$  manakala beza di antara sebutan ketiga dan 3 kali ganda sebutan kedua adalah  $10\alpha$  . Cari nilai-nilai  $r$  .*

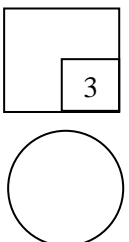
[3 marks]  
[3 markah]

Answer / Jawapan:

*For  
Examiner's  
Use*



11



For  
Examiner's  
Use

- 12 The variables  $x$  and  $y$  are related by the equation  $x^5 y = p$ . Where  $k$  is constant. Diagram 12 shows the straight line graph obtained by plotting  $\log_{10} y$  against  $\log_{10} x$ .

*Pemboleh ubah  $x$  dan  $y$  dihubungkan oleh persamaan  $x^5 y = p$ , dengan keadaan  $k$  ialah pemalar.*

*Rajah 12 menunjukkan graf garis lurus yang diperolehi dengan memplot  $\log_{10} y$  melawan  $\log_{10} x$*

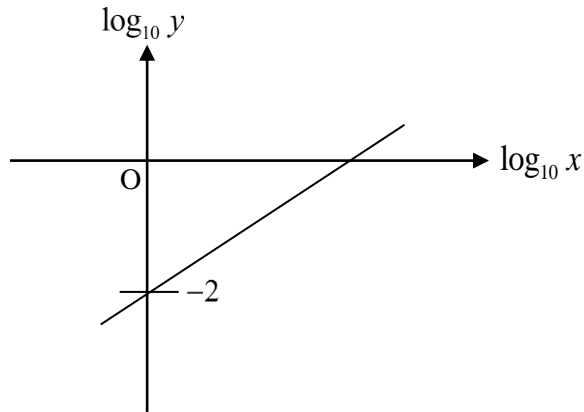


Diagram 12  
Rajah 12

- (a) Express the equation  $x^5 y = p$  in its linear form used to obtain the straight line graph shown in diagram 12.

*Ungkapkan persamaan  $x^5 y = p$ , dalam bentuk linear yang digunakan untuk memperolehi graf garis lurus seperti ditunjukkan dalam rajah 12.*

- (b) Find the value of gradient,  $m$ , and of  $p$ .

*Cari nilai kecerunan,  $m$ , dan nilai  $p$ .*

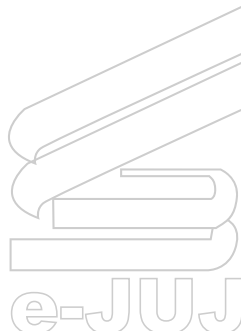
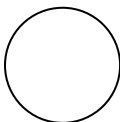
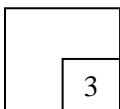
[3 marks]  
[3 markah]

Answer / Jawapan:

(a)

(b)

12





13 The straight line  $L_1$  and  $L_2$  are defined by

*Garis lurus  $L_1$  dan  $L_2$  ditakrifkan oleh*

$$L_1: 2x + y = 1$$

$$L_2: qy = px + 3$$

where  $p$  and  $q$  are constants. Given that  $L_1$  is perpendicular to  $L_2$ , express

*di mana  $p$  dan  $q$  adalah pemalar. Diberi  $L_1$  adalah berserenjang dengan  $L_2$ . Ungkapkan*

(a)  $p$  in terms of  $q$

*$p$  dalam sebutan  $q$*

(b) the equation of the straight line  $L_2$ , if  $q = 2$

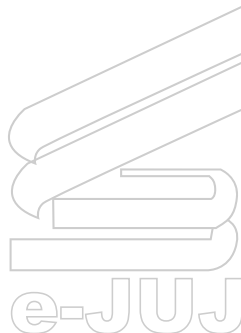
*persamaan persamaan garis lurus  $L_2$ , jika  $q = 2$*

[4 marks]  
[4 markah]

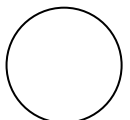
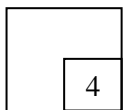
Answer / Jawapan:

(a)

(b)



13



For  
Examiner's  
Use

- 14 A car moves from  $P$  to  $Q$  with the vector  $2\vec{u}-4\vec{v}$ . Then, the car moves from  $Q$  to  $R$  with the vector  $\vec{u}+3\vec{v}$  and return to  $P$ .

*Sebuah kereta bergerak dari  $P$  ke  $Q$  dengan vektor  $2\vec{u}-4\vec{v}$ . Kemudian kereta itu bergerak dari  $Q$  ke  $R$  dengan vektor  $\vec{u}+3\vec{v}$  dan kembali semula ke  $P$ .*

- (a) Draw a triangle to represent the car movement with the arrow label.

*Lukis sebuah segitiga bagi mewakili pergerakan kereta beserta label anak panah.*

- (b) Calculate the resultant vector of  $\vec{RP}$

*Hitungkan vektor paduan  $\vec{RP}$ .*

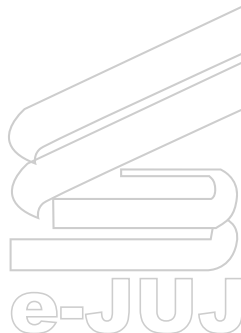
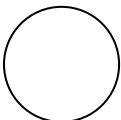
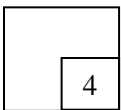
[4 marks]  
[4 markah]

Answer / Jawapan:

(a)

(b)

14



- 15 Diagram 15 shows a circle with the centre at  $O$ .  
 Diagram 15 menunjukkan suatu bulatan berpusat di  $O$ .

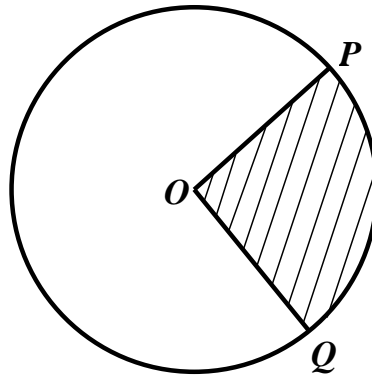


Diagram 15  
 Rajah 15

Given that the minor angle of  $POQ$  is  $\frac{3}{5}\pi$  radian. Area of the shaded region is  $7.5\pi$  unit<sup>2</sup>.

Find the length of the major arc  $PQ$ .

Diberi sudut minor  $POQ$  ialah  $\frac{3}{5}\pi$  radian. Luas sektor belorek ialah  $7.5\pi$  unit<sup>2</sup>.

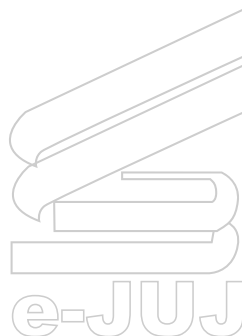
Cari panjang lengkok major  $PQ$ .

[3 marks]

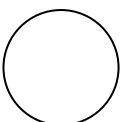
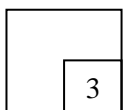
[3 markah]

Answer / Jawapan:

For  
 Examiner's  
 Use



15



For  
Examiner's  
Use

- 16 Given that  $\sin \theta = k, 0^\circ < \theta < 90^\circ$ , express in terms of  $k$  :  
Diberi  $\sin \theta = k, 0^\circ < \theta < 90^\circ$ , ungkapkan dalam sebutan  $k$  :

- a) cosec  $\theta$   
kosek  $\theta$   
b)  $\cos (90^\circ - \theta)$   
kos  $(90^\circ - \theta)$

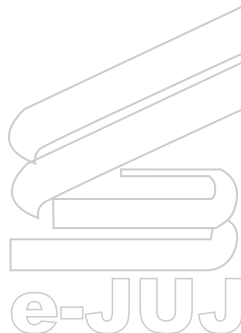
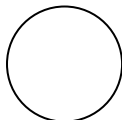
[3 marks]  
[3 markah]

Answer / Jawapan:

(a)

(b)

16



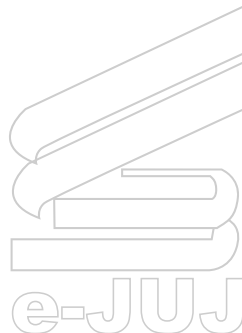
17 Solve the equation  $4 \sec\left(\frac{1}{2}x - 40^\circ\right) = 5$ , for  $0^\circ < x < 360^\circ$ .

*Selesaikan persamaan  $4 \sec\left(\frac{1}{2}x - 40^\circ\right) = 5$ , untuk  $0^\circ < x < 360^\circ$ .*

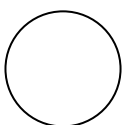
Answer / Jawapan:

*For  
Examiner's  
Use*

[4 marks]  
[4 markah]



17



For  
Examiner's  
Use

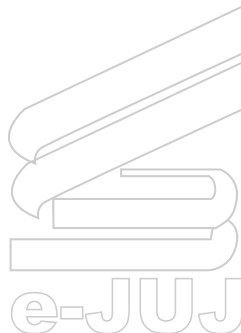
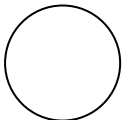
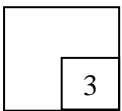
18 It is given that  $y = 5 - \frac{16}{x}$ . Find the small change in  $y$ , in terms of  $p$ , when the value of  $x$  changes from 2 to  $2 + p$ .

*Diberi bahawa  $y = 5 - \frac{16}{x}$ . Cari perubahan kecil dalam  $y$ , dalam sebutan  $p$ , apabila nilai  $x$  berubah daripada 2 kepada  $2 + p$ .*

[3 marks]  
[3 markah]

Answer / Jawapan:

18



19

For  
Examiner's  
Use

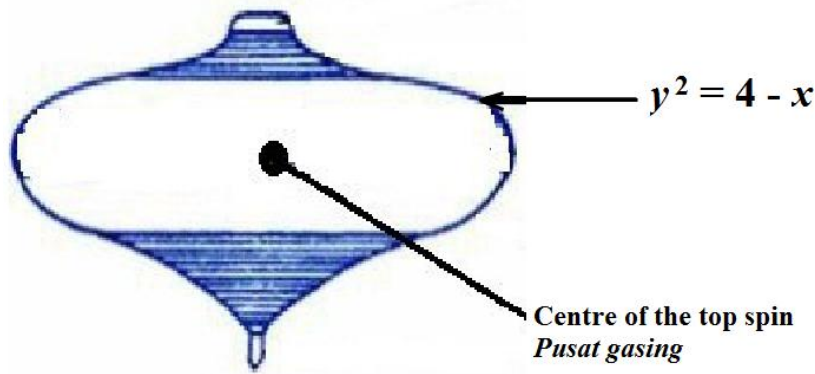


Diagram 19  
Rajah 19

Diagram 19 shows the side view of the top spin. Azmah as a graphic course student wants to study the design of the top spin. If the centre of the top spin as the origin of Cartesian plane, calculate the surface area for the side view (unshaded region) of the top spin's curve where the surface curve is given by  $y^2 = 4 - x$ .

Rajah 19 menunjukkan pandangan sisi sebuah gasing. Azmah adalah pelajar jurusan grafik yang ingin mengkaji reka bentuk bagi gasing itu. Jika pusat gasing itu adalah asalan pada satah Cartesian, hitung luas permukaan pandangan sisi gasing (kawasan tidak berlorek) itu di mana lengkung bagi permukaan gasing itu diberi oleh  $y^2 = 4 - x$ .

[3 marks]  
[3 markah]

Answer / Jawapan:

19

	3
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For  
Examiner's  
Use

- 20 Diagram 20 shows the shaded region bounded by the curve  $x = g(y)$ , the y-axis and the straight line  $y = 4$ .

Rajah 20 menunjukkan rantau berlorek yang dibatasi oleh lengkung  $x = g(y)$ , paksi-y dan garis lurus  $y = 4$ .

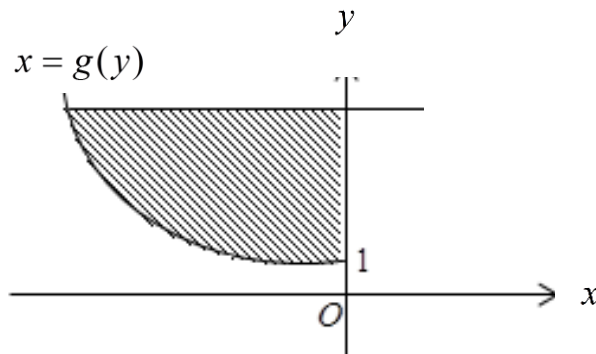


Diagram 20

Rajah 20

It is given that the area of the shaded region is 15 unit<sup>2</sup>.

Diberi bahawa luas rantau berlorek ialah 15 unit<sup>2</sup>

Find

Cari

(a)  $\int_4^1 g(y) dy$

(b)  $\int_1^4 2x dy$

[3 marks]

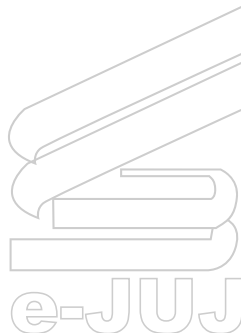
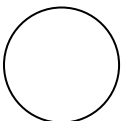
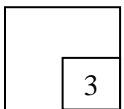
[3 markah]

Answer / Jawapan:

(a)

(b)

20





- 21 The mass of data for 50 members of environmentalists club were noted and the mean was found to be 60.4 kg with standard deviation 3.6 kg. Subsequently it was discovered that the error reading of the weighing scale was 0.6 kg less than the true weight.

*For  
Examiner's  
Use*

*Data Jisim untuk 50 orang ahli kelab pencinta alam dicatat dan didapati minnya ialah 60.4 kg dan sisihan piawainya ialah 3.6 kg. Selepas bacaan timbangan diambil, didapati bahawa terdapat ralat bacaan penimbang adalah 0.6 kg kurang daripada berat yang sebenar.*

- (a) What is the correct mean and the standard deviation.

*Berapakah min yang sebenar dan sisihan piawainya.*

- (b) Ali and Abu who have the same weight joined the club and the club's new min is 60.8 kg. What is Abu's weight?

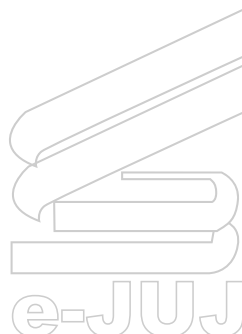
*Ali dan Abu yang mempunyai berat yang sama telah menyertai kelab alam sekitar dan min baru kelab tersebut menjadi 60.8 kg. Berapakah berat Abu?*

[4 marks]  
[4 markah]

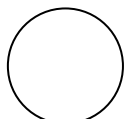
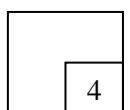
Answer / Jawapan:

(a)

(b)



21



- 22 Table 22 shows a frequency distribution of the scores of 41 students in a monthly quiz.  
*Jadual 22 menunjukkan taburan kekerapan skor bagi 41 orang murid dalam satu kuiz bulanan.*

Scores <i>Skor</i>	1 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60
Number of students <i>Bilangan murid</i>	3	4	10	$p$	6	11

Table 22  
*Jadual 22*

- (a) Find the value of  $p$ ,  
*Cari nilai  $p$ ,*
- (b) Calculate the median score for the quiz.  
*Hitung skor median bagi kuiz itu.*

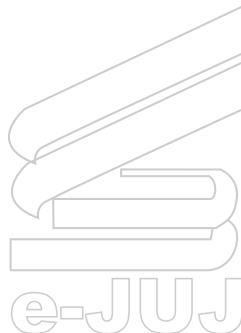
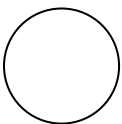
[3 marks]  
 [3 markah]

Answer / *Jawapan:*

(a)

(b)

22



23 A rescue team of 4 is to be chosen from 6 firemen and 5 medical assistant.

Find the number of different ways to form the rescue team if

*Satu kumpulan 4 orang penyelamat ingin dipilih daripada 6 orang ahli bomba dan 5 orang pembantu perubatan.*

*Cari bilangan cara yang berbeza untuk membentuk pasukan penyelamat jika*

- (a) the number of firemen and medical assistant are the same,  
*bilangan ahli bomba dan ahli pembantu perubatan adalah sama,*
- (b) the number of medical assistant is more than the number of firemen.  
*bilangan ahli pembantu perubatan adalah lebih daripada bilangan ahli bomba.*

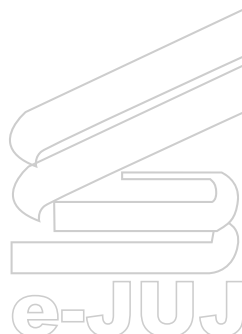
[4 marks]

[4 markah]

Answer / Jawapan:

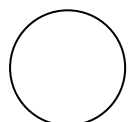
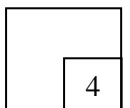
(a)

(b)



*For  
Examiner's  
Use*

23



For  
Examiner's  
Use

- 24 In election session to represent the school in athletic championship, it is found that the probability an athlete is being chosen to take part in the 100 m event is  $\frac{4}{7}$  and in the 200 m event is  $\frac{3}{5}$ .

*Dalam satu sesi pemilihan peserta yang akan mewakili sekolah dalam acara olahraga, didapati bahawa kebarangkalian seorang peserta dipilih untuk mengambil bahagian dalam acara 100 m ialah  $\frac{4}{7}$  dan acara 200 m ialah  $\frac{3}{5}$ .*

Find the probability that the athlete will be chosen to take part in  
*Cari kebarangkalian peserta itu dipilih untuk mengambil bahagian dalam*

- (a) both the events,  
*kedua-dua acara,*
- (b) at least one event.  
*sekurang-kurangnya satu acara.*

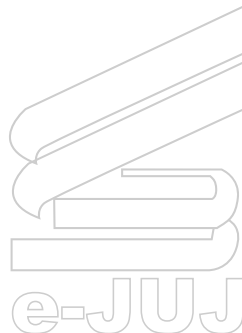
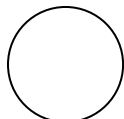
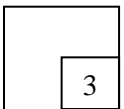
[3 marks]  
[3 markah]

Answer / Jawapan:

(a)

(b)

24



- 25 In a school, a group of students sit for a test. The marks obtained follow a normal distribution with a mean,  $\mu$  and a standard deviation,  $\sigma$ .  
It is found that 4.01% of the students get more than 65 marks and 15.87% of the students get less than 32 marks.

Find the value of  $\mu$  and of  $\sigma$ .

*Dalam sebuah sekolah, sekumpulan murid menduduki suatu ujian. Markah yang diperolehi adalah mengikut taburan normal dengan min,  $\mu$  dan sisihan piawai,  $\sigma$ .*

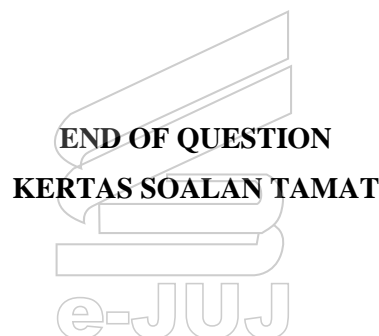
*Diketahui bahawa 4.01% daripada murid tersebut mempunyai markah melebihi 65 markah dan 15.87% daripadanya mempunyai markah kurang daripada 32 markah.*

*Carikan nilai  $\mu$  dan nilai  $\sigma$ .*

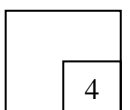
[4 marks]  
[4 markah]

Answer / Jawapan:

*For  
Examiner's  
Use*



25



4

