

Name : .....

Form : .....

**MAJLIS PENGETUA SEKOLAH MALAYSIA**

**PERCUBAAN SIJIL PELAJARAN MALAYSIA  
MATEMATIK TAMBAHAN**

**3472 / 1**

**Kertas 1  
Ogos 2015  
2 jam**

**Dua jam**

**JANGAN BUKA KERTAS SOALAN INI  
SEHINGGA DIBERITAHU**

1. *Tulis nama dan tingkatan anda pada ruangan 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.*

<i>Untuk Kegunaan Pemeriksa</i>		
Soalan	Markah Penuh	Markah Diperolehi
1	2	
2	2	
3	2	
4	3	
5	3	
6	3	
7	3	
8	3	
9	3	
10	3	
11	3	
12	4	
13	2	
14	4	
15	3	
16	3	
17	4	
18	4	
19	3	
20	4	
21	4	
22	4	
23	4	
24	3	
25	4	
<b>TOTAL</b>	<b>80</b>	

Kertas soalan ini mengandungi **26** halaman bercetak

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

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

### ALGEBRA

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

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

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

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

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

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

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

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

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

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

$$11 \quad T_n = ar^{n-1}$$

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

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

### CALCULUS KALKULUS

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

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

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

4 Area under a curve  
*Luas di bawah lengkung*

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

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

5 Volume of revolution  
*Isipadu kisanan*

$$= \int_a^b \pi y^2 \, dx \quad \text{or}$$

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

**STATISTIC**  
**STATISTIK**

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

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

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

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

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

$$6 \quad I = \frac{Q_1}{Q_0} \times 100$$

$$7 \quad \bar{I} = \frac{\sum w_i I_i}{\sum w_i}$$

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

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

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

$$11 \quad P(x=r) = {}^n C_r p^r q^{n-r}, p+q=1, p+q=1$$

$$12 \quad \text{Mean/ Min, } \mu = np$$

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

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

**GEOMETRY**  
**GEOMETRI**

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

$$2 \quad \text{Midpoint / Titik tengah} \\ (x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$3 \quad \text{A point dividing a segment of a line} \\ \text{Titik yang membahagi suatu tembereng garis} \\ (x, y) = \left( \frac{nx_1 + mx_2}{m+n}, \frac{ny_1 + my_2}{m+n} \right)$$

$$6 \quad \text{Area of triangle / Luas segitiga} = \\ \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

$$5 \quad |r| = \sqrt{x^2 + y^2}$$

$$6 \quad \hat{r} = \frac{xi + yj}{\sqrt{x^2 + y^2}}$$

[Lihat halaman sebelah

**TRIGONOMETRY**  
**TRIGONOMETRI**

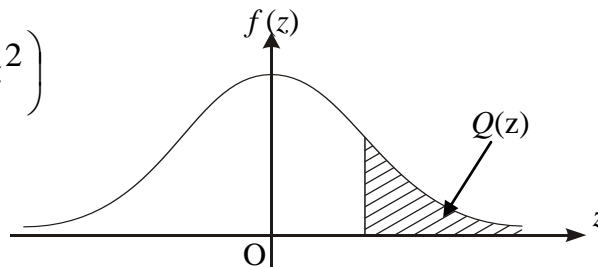
- |   |   |
|---|---|
| <p>1 Arc length, <math>s = r\theta</math><br/>Panjang lengkok, <math>s = j\theta</math></p> <p>2 Area of sector, <math>L = \frac{1}{2}r^2\theta</math><br/>Luas sektor, <math>L = \frac{1}{2}j^2\theta</math></p> <p>3 <math>\sin^2 A + \cos^2 A = 1</math><br/><math>\sin^2 A + \text{kos}^2 A = 1</math></p> <p>4 <math>\sec^2 A = \tan^2 A + 1</math><br/><math>\text{sek}^2 A = \tan^2 A + 1</math></p> <p>5 <math>\text{cosec}^2 A = 1 + \cot^2 A</math><br/><math>\text{kosec}^2 A = 1 + \text{kot}^2 A</math></p> <p>6 <math>\sin 2A = 2 \sin A \cos A</math><br/><math>\sin 2A = 2 \sin A \text{kos} A</math></p> <p>7 <math>\cos 2A = \cos^2 A - \sin^2 A</math><br/><math>= 2 \cos^2 A - 1</math><br/><math>= 1 - 2 \sin^2 A</math></p> <p><math>\text{kos} 2A = \text{kos}^2 A - \sin^2 A</math><br/><math>= 2 \text{kos}^2 A - 1</math><br/><math>= 1 - 2 \sin^2 A</math></p> | <p>8 <math>\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B</math><br/><math>\sin(A \pm B) = \sin A \text{kos} B \pm \text{kos} A \sin B</math></p> <p>9 <math>\cos(A \pm B) = \cos A \cos B \pm \sin A \sin B</math><br/><math>\text{kos}(A \pm B) = \text{kos} A \text{kos} B \pm \sin A \sin B</math></p> <p>10 <math>\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}</math></p> <p>11 <math>\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}</math></p> <p>12 <math>\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}</math></p> <p>13 <math>a^2 = b^2 + c^2 - 2bc \cos A</math><br/><math>a^2 = b^2 + c^2 - 2b \text{ck} \text{os} A</math></p> <p>14 Area of triangle / Luas segitiga<br/><math>= \frac{1}{2} ab \sin C</math></p> |
|---|---|

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

[Lihat halaman sebelah

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

1. Given the relation between Set  $P$  and Set  $Q$  is shown in the form of ordered pairs  $\{(-2,0), (1,3), (3,5), (m,-1)\}$  is defined by  $g(x) = x + 2$ .

Diberi hubungan antara Set  $P$  dan Set  $Q$  ditunjukkan dalam bentuk pasangan bertertib  $\{(-2,0), (1,3), (3,5), (m,-1)\}$  ditakrifkan sebagai  $g(x) = x + 2$ .

- (a) Find the value of  $m$ .  
Cari nilai bagi  $m$ .
- (b) State the codomain of the relation.  
Nyatakan kodomain bagi hubungan di atas.

[ 2 marks ]  
[2 markah]

Answer/Jawapan

(a)

(b)

1

2

2. The functions of  $f$  and  $g$  below are defined by  
Fungsi  $f$  dan  $g$  ditakrifkan di bawah sebagai

$$f(x) = 3x - 2$$

$$g(x) = kx - 6$$

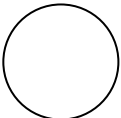
Find the value of  $k$  if  $fg = gf$  when  $k$  is a constant.  
Cari nilai bagi  $k$  jika  $fg = gf$  di mana  $k$  adalah pemalar.

[ 2 marks ]  
[2 markah]

Answer/Jawapan :

2

2

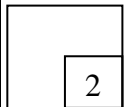


**SULIT****3472/1***For  
Examiner's  
Use*

3. Solve the quadratic equation  $x(x-3)=5$  .  
Give your answer to three significant figure.  
*Selesaikan persamaan kuadratik  $x^2 - 3x - 5 = 0$   
Beri jawapan anda betul kepada tiga angka bererti.*

[ 2 marks ]  
[2 markah]

Answer/Jawapan :

**3**

4. The area of each house flag is fixed as  $(x+3)$  m length and  $(x-2)$  m width. Given that the area of the flag is  $f(x)$ .

*Luas bagi setiap bendera rumah sukan telah ditetapkan sebagai  $(x+3)$  m panjang dan  $(x-2)$  m lebar. Diberi luas bagi bendera itu sebagai  $f(x)$ .*

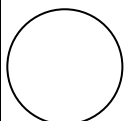
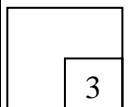
- (a) State the area of the flag as quadratic function in general form.  
*Nyatakan luas bendera itu sebagai fungsi kuadratik bentuk am.*
- (b) Find the range of  $x$  if the flag area is positive.  
*Cari julat bagi  $x$  jika luas bendera itu adalah positif.*

[ 3 marks ]  
[3 markah]

Answer/Jawapan

(a)

(b)

**4**

[Lihat halaman sebelah

For  
Examiner's  
Use

5. Given that  $\alpha$  and  $2\alpha$  are the roots of a quadratic equation  $2x^2 = 3x + p$  .  
Find the value of  $p$ , where  $p$  is a constant.

*Diberi  $\alpha$  dan  $2\alpha$  adalah punca-punca persamaan kuadratik  $2x^2 = 3x + p$  . Carikan nilai bagi  $p$ , di mana  $p$  adalah pemalar.*

[ 3 marks ]  
[3 markah]

Answer/Jawapan :

5

3

6. Solve the equation  
*Selesaikan persamaan*

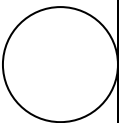
$$(0.01)^{x-2} = \left(\frac{1}{10}\right)^{x+1}$$

[ 3 marks ]  
[3 markah]

Answer/Jawapan :

6

3





**SULIT****3472/1**For  
Examiner's  
Use

7. Express  $\log_a \left( \frac{x}{y^2} \right)$  in terms of  $\log_a x$  and  $\log_a y$ . Hence, find  $\log_a y$  in terms of  $h$  if  $\log_a \left( \frac{x}{y^2} \right) = 1$  and  $\log_a x = h$ .

Ungkapkan  $\log_a \left( \frac{x}{y^2} \right)$  dalam sebutan  $\log_a x$  dan  $\log_a y$ . Seterusnya, cari  $\log_a y$  dalam sebutan  $h$  jika  $\log_a \left( \frac{x}{y^2} \right) = 1$  dan  $\log_a x = h$ .

[ 3 marks ]  
[3 markah]

Answer/Jawapan :

7



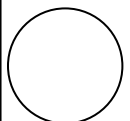
8. The first three terms of geometric progression is 5, 15, 45, ... . Find the minimum number of term that the sum of term is more than 1200.

Tiga sebutan pertama bagi suatu janjang geometri ialah 5, 15, 45, ... . Cari bilangan sebutan minimum supaya hasil tambah sebutan ini melebihi 1200.

[ 3 marks ]  
[3 markah]

Answer/Jawapan :

8



[Lihat halaman sebelah

9. A Star Bakery have sold 300 cakes on the first week . On the second week, the cakes sold have decrease by 7 cakes until 8<sup>th</sup> week. On the following week, the bakery do a sale and the sale increase by 100% then the week before.

*Kedai kek Star Bakery telah berjaya menjual kek sebanyak 300 biji pada minggu pertama . Pada minggu kedua jualan telah merosot sebanyak 7 biji dan kemerosotan bilangan jualan adalah sama sehingga minggu kelapan. Pada minggu berikutnya, kedai itu telah mengadakan minggu jualan murah dan jualan bertambah sebanyak 100% dari jualan minggu sebelumnya.*

Calculate the amount of cakes have been sold starting from the first week until the sale.

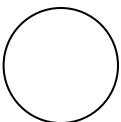
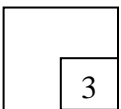
*Hitungkan jumlah kek yang telah dijual bermula minggu pertama sehingga minggu jualan murah itu.*

[ 3 marks ]

[3 markah]

Answer/Jawapan :

9



10. Aminah was asked by her teacher to arrange the pieces of paper cut into right-angled triangles by the other students as seen in Diagram 10 .

*Aminah diminta oleh gurunya supaya menyusun keratan-keratan kertas yang berbentuk segitiga tegak yang telah digunting oleh beberapa orang pelajar lain seperti Rajah 10 .*

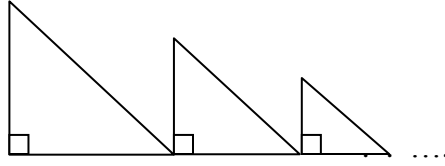


Diagram 10

Rajah 10

The area of the first triangle is  $200 \text{ cm}^2$  where the length and width of the triangle is the same. For the next triangle, the length and width is  $\frac{3}{4}$  from the length and width of the first triangle.

*Luas segitiga pertama adalah  $200 \text{ cm}^2$  di mana panjang dan lebar segitiga adalah sama. Bagi segitiga yang berikutnya, panjang dan lebar segitiga adalah  $\frac{3}{4}$  daripada panjang dan lebar segitiga sebelumnya.*

Find

*Carikan*

- (a) the width of the first triangle  
*lebar bagi segitiga yang pertama*
- (b) area of 3<sup>rd</sup> triangle  
*luas bagi segitiga yang ketiga*

[ 3 marks ]

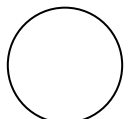
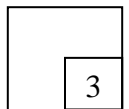
[3 markah]

*Answer/Jawapan*

(a)

(b)

10



SULIT

For  
Examiner's  
Use

11. Diagram 11(a) shows the straight line graph  $\frac{y}{x} = 3 - 2x$  obtained from non-linear equation as shown in Diagram 11(b).

Rajah 11(a) menunjukkan graf garis lurus  $\frac{y}{x} = 3 - 2x$  yang diperolehi daripada persamaan bukan linear seperti ditunjukkan dalam Rajah 11(b).

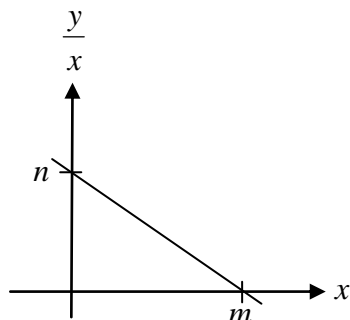


Diagram 11(a)  
Rajah 11(a)

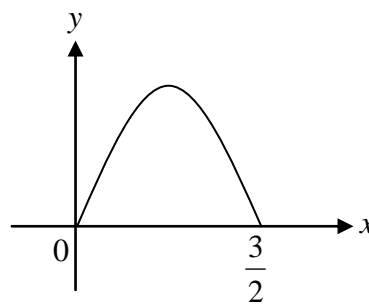


Diagram 11(b)  
Rajah 11(b)

- (a) Find the value of  $m$  and of  $n$ .  
*Cari nilai  $m$  dan nilai  $n$ .*
- (b) State that non linear equation.  
*Nyatakan persamaan tak linear itu.*

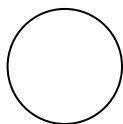
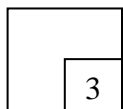
[ 3 marks ]  
[3 markah]

Answer/Jawapan

(a)

(b)

11



**SULIT****3472/1**For  
Examiner's  
Use

12. Diagram 12 shows the straight line with equation  $hx - \frac{y}{2} - 2 = 0$ , where  $h$  is a constant.

Rajah 12 menunjukkan garis lurus dengan persamaan  $hx - \frac{y}{2} - 2 = 0$ , di mana  $h$  adalah pemalar.

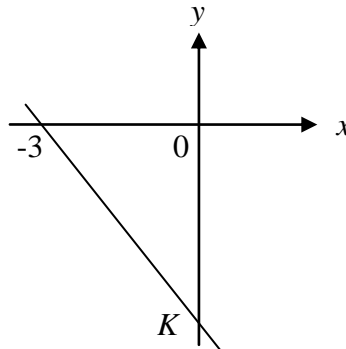


Diagram 12  
Rajah 12

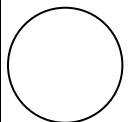
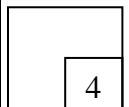
Find  
Carikan

- (a) the value of  $h$  and the coordinates of  $K$ .  
nilai  $h$  dan koordinat  $K$ .
- (b) the equation of straight line that perpendicular to the equation above and passes through the point  $(4,3)$ .  
Cari persamaan garis lurus yang berserenjang dengan persamaan di atas dan melalui titik  $(4,3)$ .

[ 4 marks ]  
[4 markah]

Answer/Jawapan

- (a)
- (b)

**12**

[Lihat halaman sebelah

For  
Examiner's  
Use

**SULIT**

13. Given that the distance between point  $A(2,5)$  and point  $B(-2, t)$  is 5 unit

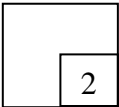
*Diberi bahawa jarak di antara titik  $A(2,5)$  dan titik  $B(-2, t)$  ialah 5 unit.*

Find the values of  $t$ .  
*Cari nilai-nilai bagi  $t$ .*

[ 2 marks ]  
[2 markah]

Answer/Jawapan :

**13**



14. Given that  $\sin \theta = \frac{p}{2}$  and  $90^\circ \leq \theta \leq 180^\circ$ , find ,in terms of  $p$ ,

*Diberi  $\sin \theta = \frac{p}{2}$  dan  $90^\circ \leq \theta \leq 180^\circ$ , cari, dalam sebutan  $p$ ,*

- (a) cosec  $\theta$ ,  
kosek  $\theta$ ,  
(b)  $\sin(90^\circ - \theta)$ .

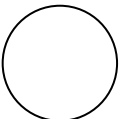
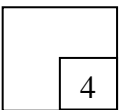
[4 marks]  
[4 markah]

Answer/Jawapan :

(a)

(b)

**14**



15. Diagram 15 shows four points  $O(0,0)$ ,  $P(3,8)$ ,  $Q(7,-2)$  and  $R(-2, k)$ .  
Rajah 15 menunjukkan empat titik  $O(0,0)$ ,  $P(3,8)$ ,  $Q(7,-2)$  dan  $R(-2, k)$ .

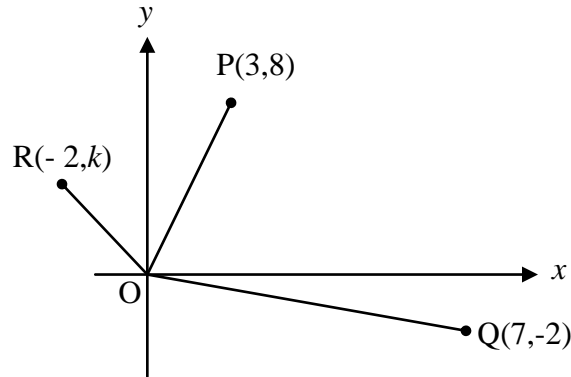


Diagram 15  
Rajah 15

Given that  $\overline{OR}$  is parallel to  $\overline{QP}$ .

Diberi bahawa  $\overline{OR}$  adalah selari dengan  $\overline{QP}$ .

- (a) Express  $\overline{QP}$  in the form of  $\begin{pmatrix} x \\ y \end{pmatrix}$

Ungkapkan  $\overline{QP}$  dalam bentuk  $\begin{pmatrix} x \\ y \end{pmatrix}$

- (b) Find the value of  $k$ .

Cari nilai  $k$ .

[3 marks]

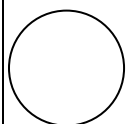
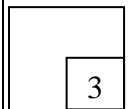
[3 markah]

Answer/Jawapan :

- (a)

- (b)

15



[Lihat halaman sebelah

SULIT

For  
Examiner's  
Use

16. Diagram 16 shows a parallelogram  $PQRS$  with  $\overrightarrow{PS} = -3\underline{x} + 4\underline{y}$  and  $\overrightarrow{PQ} = 6\underline{x} + 2\underline{y}$ .  
Given that  $M$  is midpoint of  $QR$ .

Rajah 16 menunjukkan segiempat selari  $PQRS$  dengan  $\overrightarrow{PS} = -3\underline{x} + 4\underline{y}$  dan  $\overrightarrow{PQ} = 6\underline{x} + 2\underline{y}$ .

Diberi bahawa  $M$  ialah titik tengah bagi  $QR$ .

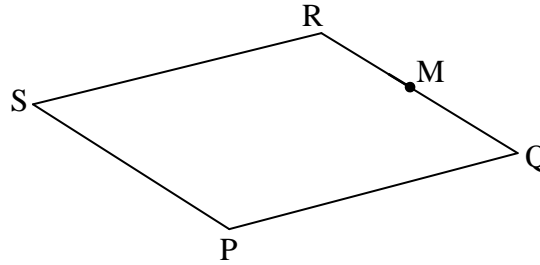


Diagram 16  
Rajah 16

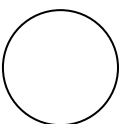
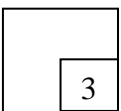
Find  $\overrightarrow{PM}$  in terms of  $\underline{x}$  and  $\underline{y}$ .

Cari  $\overrightarrow{PM}$  dalam sebutan  $\underline{x}$  dan  $\underline{y}$ .

[ 3 marks ]  
[ 3 markah ]

Answer/Jawapan :

16





**SULIT****3472/1***For  
Examiner's  
Use*

17. The equation of a curve is given by  $y = x^2 + (3x - 1)^2$ .  
*Persamaan bagi satu lengkung diberi oleh  $y = x^2 + (3x - 1)^2$ .*

Calculate

*Hitung*

- (a) the value of  $x$  when  $y$  is minimum.

*nilai  $x$  apabila  $y$  adalah minimum.*

- (b) the minimum value of  $y$ .

*nilai minimum bagi  $y$ .*

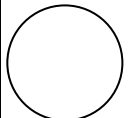
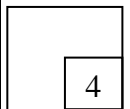
[ 4 marks ]

[4 markah]

Answer/Jawapan :

(a)

(b)

**17****[Lihat halaman sebelah**

**SULIT**

For  
Examiner's  
Use

18. It is given that  $V = 6x^2 + x - 4$ .

Diberi bahawa  $V = 6x^2 + x - 4$ .

Find,

Cari,

(a) the value of  $\frac{dV}{dx}$  when  $x = 1$ .

nilai bagi  $\frac{dV}{dx}$  apabila  $x = 1$ .

(b) the approximate changes of  $V$  in terms of  $k$ , when  $x$  changes from 1 to  $1+k$ , where  $k$  is small value.

perubahan kecil bagi  $V$  dalam sebutan  $k$ , apabila  $x$  berubah daripada 1 kepada  $1+k$ , di mana  $k$  adalah nilai kecil.

[ 4 marks ]

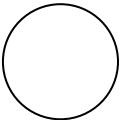
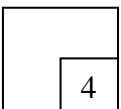
[4 markah]

Answer/Jawapan :

(a)

(b)

18



**SULIT****3472/1**For  
Examiner's  
Use

19. Diagram 19 shows a curve  $y = g(x)$ .

*Rajah 19 menunjukkan lengkung  $y = g(x)$ .*

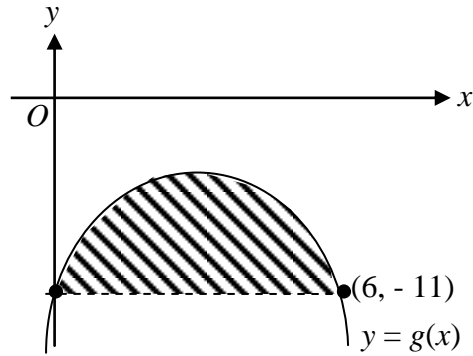


Diagram 19  
*Rajah 19*

Given that the area of shaded region is  $36 \text{ unit}^2$ .

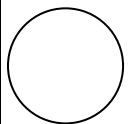
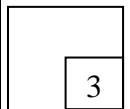
*Diberi bahawa luas kawasan berlorek ialah  $36 \text{ unit}^2$ .*

Find the value of  $\int_0^6 g(x) dx$ .

*Cari nilai bagi  $\int_0^6 g(x) dx$ .*

[ 3 marks ]  
[3 markah]

Answer/Jawapan :

**19**

[Lihat halaman sebelah

**SULIT**

20. Diagram 20 shows a sector AOB with centre O.

*Rajah 20 menunjukkan suatu sektor AOB dengan pusat O.*

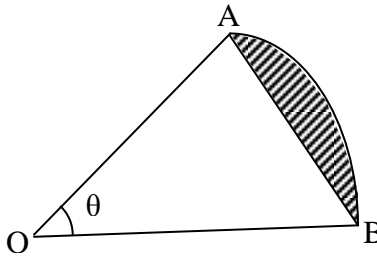


Diagram 20  
*Rajah 20*

Given that the length of arc AB is 9.54 cm and the perimeter of sector AOB is 30 cm.

*Diberi bahawa panjang lengkok AB ialah 9.54 cm dan perimeter sector AOB ialah 30 cm.*

Find

*Cari*

(a) the value of  $\theta$ , in radian.

*nilai bagi  $\theta$ , dalam radian.*

(b) the area of shaded region.

*luas bagi kawasan berlorek.*

[ 4 marks ]

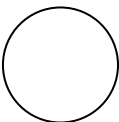
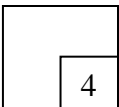
[4 markah]

Answer/Jawapan :

(a)

(b)

20



**SULIT****3472/1***For  
Examiner's  
Use*

21. A set of numbers 2, 3,  $2k$ ,  $k + 6$ , 10 and 12 which is arranged in ascending order has a mean of  $p$ .

*Satu set nombor 2, 3,  $2k$ ,  $k + 6$ , 10 dan 12 yang diatur dalam tertib menaik mempunyai min  $p$ .*

- (a) Express  $k$  in terms of  $p$ .

*Ungkapkan  $k$  dalam sebutan  $p$ .*

- (b) Find the median of the numbers in terms of  $k$ .

*Cari median bagi set nombor itu dalam sebutan  $k$ .*

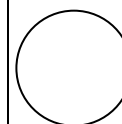
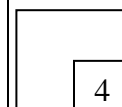
[ 4 marks ]

[4 markah]

Answer/Jawapan :

- (a)

- (b)

**21****[Lihat halaman sebelah**

**SULIT**

For  
Examiner's  
Use

22. Diagram 22 shows a histogram for the distribution of marks obtained by 30 students in Mathematics test.

*Rajah 22 menunjukkan sebuah histogram bagi taburan markah yang diperolehi oleh 30 orang pelajar dalam satu ujian Matematik.*

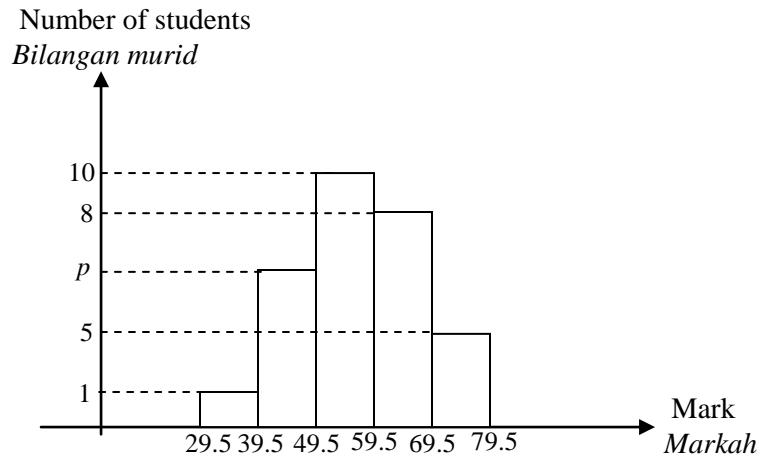


Diagram 22  
Rajah 22

- (a) Find the value of  $p$ .

*Cari nilai bagi  $p$ .*

- (b) Calculate the mean marks obtained by the students.

*Hitung markah min yang diperolehi oleh pelajar-pelajar tersebut.*

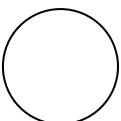
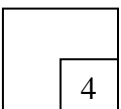
[ 4 marks ]  
[4 markah]

Answer/Jawapan :

(a)

(b)

22



23. Shireen has 5 reference books and 6 story books. She decided to donate 5 books to her school library.

*Shireen mempunyai 5 buah buku rujukan dan 6 buah buku cerita. Dia bercadang untuk menderma 5 buah buku kepada perpustakaan sekolahnya.*

Find the number of ways of selection if

*Cari bilangan cara pilihan boleh dibuat jika*

- (a) there is no restriction

*tiada kekangan dikenakan*

- (b) there are at least 3 story books to be selected.

*sekurang-kurangnya 3 buah buku cerita mesti dipilih.*

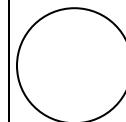
[ 4 marks ]  
[4 markah]

Answer/Jawapan :

(a)

(b)

23



[Lihat halaman sebelah

**SULIT**

24. Table 24 shows the number of coloured cards in a bag.

*Jadual 24 menunjukkan bilangan kad berwarna dalam sebuah beg.*

Colour / Warna	Number of cards <i>Bilangan kad</i>
Blue / <i>Biru</i>	4
Black / <i>Hitam</i>	$h$
Red / <i>Merah</i>	$h - 3$

Table 24  
*Jadual 24*

A card is picked at random from the bag. Given that the probability of getting a blue card is same as the probability of getting a red card.

*Satu kad diambil secara rawak daripada beg itu. Diberi bahawa kebarangkalian untuk memperolehi satu kad biru adalah sama dengan kebarangkalian untuk memperolehi satu kad merah.*

Find

*Cari*

- (a) the value of  $h$  .  
*nilai  $h$  .*
- (b) the probability of getting a black card.  
*kebarangkalian untuk memperolehi kad hitam.*

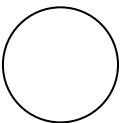
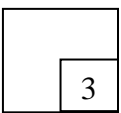
[ 3 marks ]  
[3 markah]

Answer/Jawapan :

(a)

(b)

24





SULIT

3472/1

For  
Examiner's  
Use

25. Diagram 25 shows the standard normal distribution curve.  
Rajah 25 menunjukkan graf taburan normal piawai.

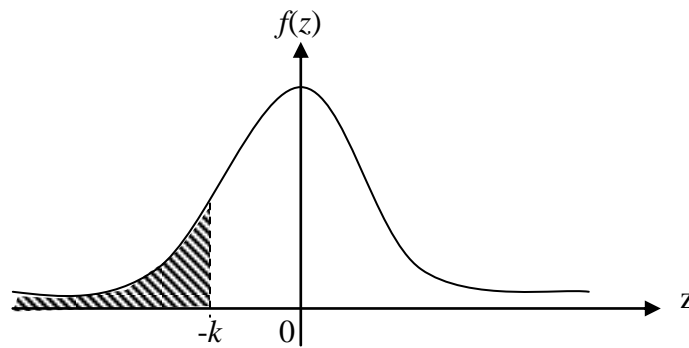


Diagram 25  
Rajah 25

- (a) Given that the area of shaded region is 0.1766.  
*Diberi bahawa luas kawasan berlorek ialah 0.1766.*
- Find  $P(-k < z < k)$  .  
*Cari  $P(-k < z < k)$ .*
- (b)  $X$  is a continuous random variable which is normally distributed with mean of 35 kg and standard deviation of 1.4 kg , where the  $z$  value is  $k$ .  
 *$X$  ialah pemboleh ubah rawak selanjar yang tertabur secara normal dengan min 35 kg dan sisihan piawai 1.4 kg, di mana nilai  $z$  ialah  $k$ .*
- Find the value of  $X$  .  
*Cari nilai  $X$ .*

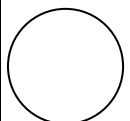
[ 4 marks ]  
[4 markah]

Answer/Jawapan :

(a)

(b)

25



END OF QUESTION PAPER  
KERTAS SOALAN TAMAT

**INFORMATION FOR CANDIDATES**  
**MAKLUMAT UNTUK CALON**

1. This question paper consists of **25** questions  
*Kertas soalan ini mengandungi 25 soalan*
2. Answer **all** questions.  
*Jawab semua soalan*
3. Write your answers in the spaces provided in the question paper.  
*Tulis jawapan anda dalam ruang yang disediakan dalam kertas soalan.*
4. Show your working. It may help you to get marks.  
*Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.*
5. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.  
*Sekiranya anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.*
6. The diagrams in the questions provided are not drawn to scale unless stated.  
*Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. The marks allocated for each question are shown in brackets.  
*Markah yang diperuntukkan bagi setiap soalan ditunjukkan dalam kurungan.*
8. A list of formulae is provided on pages 2 to 5.  
*Satu senarai rumus disediakan di halaman 2 hingga 5.*
9. A booklet of four-figure mathematical tables is provided.  
*Sebuah buku sifir matematik empat angka disediakan.*
10. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*
11. Hand in this question paper to the invigilator at the end of the examination.  
*Serahkan kertas soalan ini kepada pengawas peperiksaan di akhir peperiksaan.*