3472/1
Matematik
Tambahan
Kertas 1
Sept. 2019
2 jam

SMK ……
……..

PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
2019
MATEMATIK TAMBAHAN
KERTAS 1

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

Arahan:

1. *Kertas soalan ini mengandungi 20 soalan*
2. *Jawab semua soalan*
3. *Bagi setiap soalan berikan satu jawapan sahaja*
4. *Jawapan hendaklah ditulis pada ruang yang disediakan dalam kertas soalan ini*
5. *Tunjukkan langkah-langkah penting dalam ruang yang disediakan dalam kertas soalan*
6. *Jika anda hendak menukar jawapan batalkan dengan kemas jawapan yang telah dibuat, kemudian tulis jawapan yang baru*
7. *Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan*
8. *Markah yang diperuntukkan bagi setiap soalan ditunjukkan dalam kurungan*
9. *Satu senarai rumus disediakan dihalaman 2 hingga 4 dan jadual taburan normal N(0 , 1)*
10. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan*
11. *Kertas soalan ini hendaklah diserahkan di akhir peperiksaan*

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

KERTAS SOALAN INI MENGANDUNGI 20 HALAMAN BERCETAK

ALGEBRA

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

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. $\log_a \dfrac{m}{n} = \log_a m - \log_a n$

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

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

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

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

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

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

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

CALCULUS
KALKULUS

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

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

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

4. Area under a curve

   Luas di bawah lengkung

   $= \int_a^b y \, dx$ or *(atau)*

   $= \int_a^b x \, dy$

5. Volume of revolution

   Isipadu kisaran

   $= \int_a^b \pi y^2 \, dx$ or (*atau*)

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

STATISTICS
STATISTIK

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

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

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

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

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

6. $I = \dfrac{Q_1}{Q_0} \times 100$

7. $\bar{I} = \dfrac{\sum W_i I_i}{\sum W_i}$

8. ${}^nP_r = \dfrac{n!}{(n-r)!}$

9. ${}^nC_r = \dfrac{n!}{(n-r)!r!}$

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

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

12. Mean / *Min* , $\mu = np$

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

14. $Z = \dfrac{X - \mu}{\sigma}$

GEOMETRY
GEOMETRI

1. Distance / *Jarak*

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

2. Midpoint / *Titik tengah*

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

3. A point dividing a segment of a line
   Titik yang membahagi suatu tembereng garis

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

4. Area of a triangle / *Luas segi tiga*

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

5. $\left| \underset{\sim}{r} \right| = \sqrt{x^2 + y^2}$

6. $\hat{r} = \dfrac{x \underset{\sim}{i} + y \underset{\sim}{j}}{\sqrt{x^2 + y^2}}$

TRIGONOMETRY
TRIGONOMETRI

1. Arc length, $s = r\theta$
   Panjang lengkok, $s = j\theta$

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

3. $\sin^2 A + \cos^2 A = 1$
   $\sin^2 A + \text{kos}^2 A = 1$

4. $\sec^2 A = 1 + \tan^2 A$
   $\text{sek}^2 A = 1 + \tan^2 A$

5. $\text{cosec}^2 A = 1 + \cot^2 A$
   $\text{kosek}^2 A = 1 + \text{kot}^2 A$

6. $\sin 2A = 2 \sin A \cos A$
   $\sin 2A = 2 \sin A \text{ kos } A$

7. $\cos 2A = \cos^2 A - \sin^2 A$
   $= 2\cos^2 A - 1$
   $= 1 - 2\sin^2 A$
   $\text{kos } 2A = \text{kos}^2 A - \sin^2 A$
   $= 2\,\text{kos}^2 A - 1$
   $= 1 - 2\sin^2 A$

8. $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
   $\sin(A \pm B) = \sin A \text{ kos } B \pm \text{kos } A \sin B$

9. $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$
   $\text{kos}(A \pm B) = \text{kos } A \text{ kos } B \mp \sin A \sin B$

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

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

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

13. $a^2 = b^2 + c^2 - 2bc\cos A$
    $a^2 = b^2 + c^2 - 2bc\,\text{kos } A$

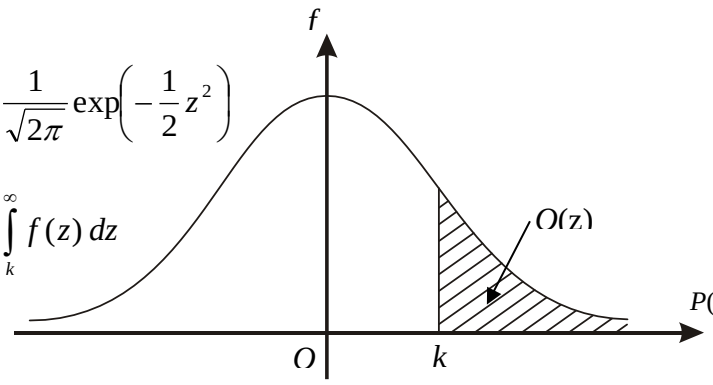
14. Area of a triangle / *Luas segi tiga*
    $= \frac{1}{2} ab \sin C$

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	1	2	3	4	5	6	7	8	9
											Minus / *Tolak*								
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859	4	8	12	15	19	23	27	31	35
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483	4	7	11	15	19	22	26	30	34
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121	4	7	11	15	18	22	25	29	32
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776	3	7	10	14	17	20	24	27	31
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451	3	7	10	13	16	19	23	26	29
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148	3	6	9	12	15	18	21	24	27
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867	3	5	8	11	14	16	19	22	25
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611	3	5	8	10	13	15	18	20	23
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379	2	5	7	9	12	14	16	19	21
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170	2	4	6	8	10	12	14	16	18
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985	2	4	6	7	9	11	13	15	17
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823	2	3	5	6	8	10	11	13	14
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681	1	3	4	6	7	8	10	11	13
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559	1	2	4	5	6	7	8	10	11
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0..0475	0.0465	0.0455	1	2	3	4	5	6	7	8	9
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367	1	2	3	4	4	5	6	7	8
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294	1	1	2	3	4	4	5	6	6
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233	1	1	2	2	3	4	4	5	5
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183	0	1	1	2	2	3	3	4	4
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143	0	1	1	2	2	2	3	3	4
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110	0	1	1	1	2	2	2	3	3
2.3	0.0107	0.0104	0.0102								0	1	1	1	1	2	2	2	2
				0.00990	0.00964	0.00939	0.00914				3	5	8	10	13	15	18	20	23
								0.00889	0.00866	0.00842	2	5	7	9	12	14	16	16	21
2.4	0.00820	0.00798	0.00776	0.00755	0.00734						2	4	6	8	11	13	15	17	19
						0.00714	0.00695	0.00676	0.00657	0.00639	2	4	6	7	9	11	13	15	17
2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480	2	3	5	6	8	9	11	12	14
2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357	1	2	3	5	6	7	9	9	10
2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264	1	2	3	4	5	6	7	8	9
2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193	1	1	2	3	4	4	5	6	6
2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139	0	1	1	2	2	3	3	4	4
3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100	0	1	1	2	2	2	3	3	4

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

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



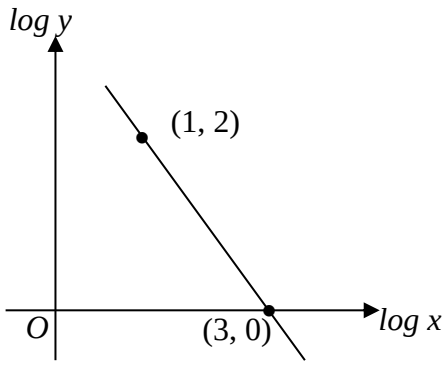
Example / *Contoh*:

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

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

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

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

1.	Given that x, 12 and 48 are the first three terms of a geometric progression. *Diberi* x, 12 *dan* 48 *adalah tiga sebutan pertama dalam suatu janjang geometri* Find, *Cari* *(a)* the value of x *nilai* x *(b)* the sum from the third term to the tenth term *Hasil tambah dari sebutan ketiga hingga sebutan ke sepuluh* [3 marks/*markah*]
	Answer/*Jawapan*: (a) (b)
2.	 Diagram 2 / *Rajah* 2 Diagram 2 above shows the graph of $\log y$ against $\log x$ Find y in terms of x. *Rajah* 2 *di atas menunjukkan graf* $\log y$ *melawan* $\log x$. *Cari* y *dalam sebutan* x. [3 marks/*markah*]
	Answer/*Jawapan*:

3.	a) Given that the coordinates of *A* and *B* are (6 ,0) and (0, –8) respectively. state the equation PQ of the straight line in intercept form. *Diberi koordinat A dan B masing-masing ialah* (6, 0) *dan* (0, –8). *Nyatakan persamaan garis lurus PQ dlm bentuk pintasan* [1 mark*/markah*] b) A point *S* moves such that its distance from point *A* (4, 5) is 5 units.Find the equation of the locus of *S*. *Satu titik S bergerak dengan keadaan jaraknya dari titik A* (4, 5) *adalah* 5 *unit. Cari persamaan lokus bagi* S. [2 marks*/markah*]
	Answer/*Jawapan*: (a) (b)

4. Diagram 4 shows vector $\overrightarrow{AB}$ drawn on a Cartesian plane.

Rajah 4 *menunjukkan vektor* $\overrightarrow{AB}$ *dilukis atas suatu satah Cartesan.*

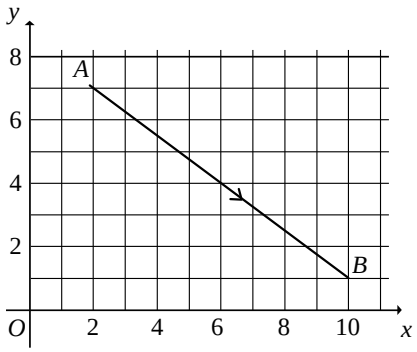


Diagram 4 / *Rajah* 4

a) Express $\overrightarrow{AB}$ in the form of $\begin{pmatrix} x \\ y \end{pmatrix}$

Ungkapkan $\overrightarrow{AB}$ *dalam bentuk* $\begin{pmatrix} x \\ y \end{pmatrix}$

b) Find the magnitude of $\overrightarrow{AB}$

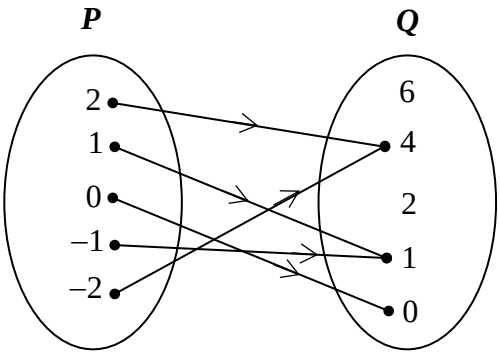
Cari magnitud $\overrightarrow{AB}$.

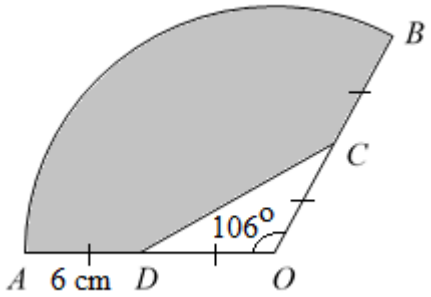
[3 marks /*markah*]

Answer/*Jawapan*:

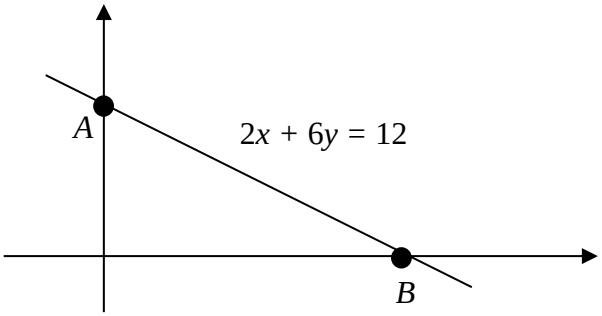
(a)

(b)

5.	Diagram 5 shows an arrow diagram for the relation between set *P* and set *Q*. *Rajah* 5 *menunjukkan gambar rajah anak panah bagi hubungan antara set P dan set Q.*  Diagram 5 /*Rajah* 5 State / *Nyatakan* (*a*) the object of 1, *objek bagi* 1, (*b*) the type of relation. *jenis hubungan itu.* [2 marks/*markah*]
	Answer/*Jawapan*: (a) (b)
6.	Solve the equation $2\cos^2 x + 3\sin x = 0$ for $0° \leq x \leq 360°$. *Selesaikan persamaan* $2\ kos^2\ x + 3\sin x = 0$ *untuk* $0° \leq x \leq 360°$. [4 marks /*markah*]
	Answer/*Jawapan*:

7.	The diagram 7 shows a sector *AOB* of a circle with centre *O*. *Rajah 7 menunjukkan sektor AOB bagi bulatan berpusat pada O.*  Diagram 7 / *Rajah* 7 Find *Cari* (a) the length, in cm, of the arc AB *panjang, dalam cm, lengkok AB.* (b) the area, in cm^2, of the shaded region, *luas, dalam cm^2, kawasan berlorek.* [4 marks/*markah*]
	Answer/*Jawapan*: (a) (b)

8.	Simplify *Permudahkan :* $\frac{10^{3n-1} \times 5^{1-3n}}{8^{1+n}}$ [3 marks/ *markah*]
	Answer/*Jawapan*:
9.	The gradient function of the curve $f(x)=(px+1)^4$ is $16\left(\frac{x}{q}+1\right)^3$, where p and q are positive constants. Find the values of p and q. *Fungsi kecerunan bagi lengkung* $f(x)=(px+1)^4$ *ialah* $16\left(\frac{x}{q}+1\right)^3$, *di mana p dan q adalah positif. Cari nilai p dan q.* [3 marks/ *markah*]
	Answer/*Jawapan*:

10.	Find the range of values of x for $3x^2 - 5x - 16 \le x(2x+1)$ *Cari julat nilai x bagi* $3x^2 - 5x - 16 \le x(2x+1)$ [3 marks/ *markah*]
	Answer/*Jawapan*:
11.	 Diagram 11/*Rajah* 11 Diagram 11 shows the straight line $2x + 6y = 12$ which intersects the y-axis at point A and intersects the x-axis at point B. Find the equation of the perpendicular bisector of AB. *Rajah* 11 *menunjukkan garis lurus* $2x + 6y = 12$ *yang menyilang paksi-y pada titik A dan menyilang paksi-x pada titik B. Cari persamaan pembahagi dua sama serenjang bagi AB.* [3 marks/*markah*]
	Answer/Jawapan:

12.	Given that $\underset{\sim}{a} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$ and $\underset{\sim}{b} = \begin{pmatrix} 2 \\ p \end{pmatrix}$, find the values of p if *Diberi bahawa* $\underset{\sim}{a} = \begin{pmatrix} 4 \\ 2 \end{pmatrix}$ *dan* $\underset{\sim}{b} = \begin{pmatrix} 2 \\ p \end{pmatrix}$, *cari nilai p jika* (a) $\underset{\sim}{a}$ and $\underset{\sim}{b}$ are collinear, $\underset{\sim}{a}$ *dan* $\underset{\sim}{b}$ *adalah segaris,* (b) $\left\| \underset{\sim}{a} \right\| = \left\| \underset{\sim}{b} \right\|$ [4 marks/*markah*]
	Answer/*Jawapan*: (a) (b)
13.	Given the quadratic equation $\frac{x(x-5)}{3} = 2.$ *Diberi persamaan kuadratik* $\frac{x(x-5)}{3} = 2.$ (*a*) Express the equation in the form of $ax^2 + bx + c = 0$. *Ungkapkan persamaan itu dalam bentuk* $ax^2 + bx + c = 0$. (*b*) State the product of roots of the quadratic equation. *Nyatakan hasil darab punca bagi persamaan kuadratik itu.* (c) Determine the type of roots of the equation. *Tentukan jenis punca bagi persamaan itu*. [4 marks/*markah*]
	Answer/*Jawapan*: (a) (b) (c)

14.	In a selection to represent the school for the mathematics competition, the probability that Rahim, Ailing and Suzana is chosen are $\frac{2}{5}$, $\frac{3}{4}$ and $\frac{2}{3}$ respectively. *Dalam satu pemilihan untuk mewakili sekolah bagi suatu pertandingan matematik, kebarangkalian bahawa Rahim, Ailing dan Suzana terpilih masnig-masing ialah* $\frac{2}{5}$, $\frac{3}{4}$ *dan* $\frac{2}{3}$. Find the probability that *Cari kebarangkalian bahawa* (a) only Suzana is chosen *hanya Suzana yang terpilih,* (b) at least one of them is chosen *sekurang-kurangnya seorang daripada mereka terpilih.* [4 marks/*markah*]
	Answer/*Jawapan*: (a) (b)

15. Table 15 shows a distribution of scores obtained by a group of participants in a quiz.

Jadual 15 *menunjukkan taburan skor yang diperoleh sekumpulan peserta dalam suatu kuiz.*

Score/ *Skor*	1 - 3	4 - 6	7 - 9	10 - 12	13 – 15
Cumulative frequency/ *Kekerapan longgokan*	3	10	25	35	40

Table 15/ *Jadual* 15

(a) State the number of participants.
Nyatakan jumlah peserta.

(b) Find the mean score.
Cari skor min.

[3 marks/*markah*]

Answer/*Jawapan*:
(a)

(b)

16. Given $\int_1^5 g(x)dx = 5$, find the value of m if $\int_1^5 [mx - 2g(x)]dx = 5 - 3m$.

Diberi $\int_1^5 g(x)dx = 5$, *cari nilai m jika* $\int_1^5 [mx - 2g(x)]dx = 5 - 3m$.

[3 marks/ *markah*]

Answer/*Jawapan*:

17.	Given the function $f : x \to \lvert 3x + 4 \rvert$, find the possible values of x such that $f(x) = 5$. *Diberi fungsi* $f : x \to \lvert 3x + 4 \rvert$, *cari nilai-nilai* x *yang mungkin supaya* $f(x) = 5$. [2 marks/*markah*]
	Answer/*Jawapan*:
18.	Given $\log_k 25 = 2$, find the value of *Diberi* $\log_k 25 = 2$, *cari nilai* (a) k, (b) $\log_{25}\left(\frac{1}{k}\right)$. [3 marks/*markah*]
	Answer/*Jawapan*: (a) (b)

19. Diagram 19 shows a circle with centre O which is divided into twelve sectors. The angles of the sectors form a progression with the first term of $p°$.

Rajah 19 *menunjukkan sebuah bulatan dengan pusat O yang telah dibahagikan kepada dua belas sektor. Sudut sektor-sektor itu membentuk suatu janjang dengan sebutan pertama* $p°$.

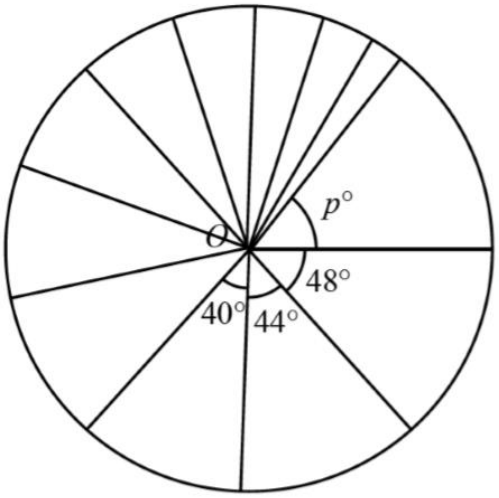


Diagram 19 / *Rajah* 19

(a) State whether the progression is an arithmetic progression or a geometric progression.
Nyatakan sama ada janjang itu ialah suatu janjang aritmetik atau janjang geometri.

(b) Find the value of p.
Cari nilai p.

(c) Hence, find the angle of the tenth sector.
Seterusnya, cari sudut sektor yang kesepuluh.

[3 marks/*markah*]

Answer/*Jawapan*:
(a)

(b)

(c)

20. Diagram 20 shows the graph of a quadratic function $y = f(x)$. The straight line $y = -9$ is a tangent to the curve $y = f(x)$.

Rajah 20 *menunjukkan graf fungsi kuadratik* $y = f(x)$. *Garis lurus* $y = -9$ *ialah tangen pada lengkung* $y = f(x)$.

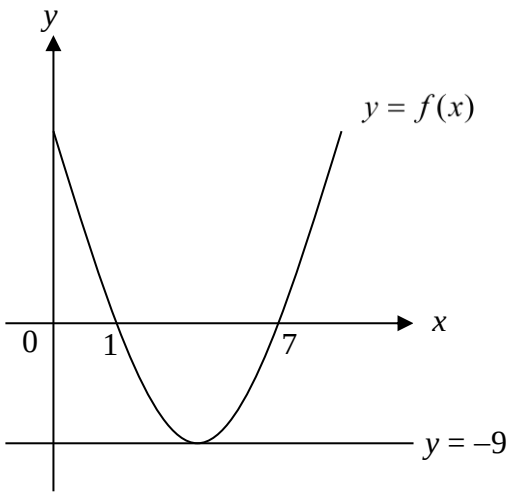


Diagram 20/ *Rajah* 20

(a) Write the equation of the axis of symmetry of the curve.
Tuliskan persamaan paksi simetri bagi lengkung itu.

[1 mark/*markah*]

(b) Express $f(x)$ in the form of $(x + p)^2 + q$, where p and q are constants if the graph is reflected about the x-axis.
Ungkapkan $f(x)$ *dalam bentuk* $(x + p)^2 + q$, *dengan keadaan p dan q adalah pemalar jika graf tersebut dipantulkan pada paksi-x*

[2 marks/*markah*]

Answer/*Jawapan*:

(a)

(b)

21.	Given that the inverse function of $f : x \to 3x + m$ is $f^{-1} : x \to \frac{x-7}{n}$, find the values of m and n. *Diberi fungsi songsang bagi* $f : x \to 3x + m$ *ialah* $f^{-1} : x \to \frac{x-7}{n}$, *cari nilai-nilai m dan n.* [3 marks/*markah*]
	Answer/*Jawapan*:
22.	Given that 108, *p, q, s* and $\frac{27}{64}$ are the first five terms of a geometric progression, find the values of *p, q* and *s* *Diberi* 108, *p, q, s dan* $\frac{27}{64}$ *adalah lima sebutan pertama bagi suatu janjang geometri, cari nilai bagi p, q dan s.* [3 marks/*markah*]
	Answer/*Jawapan*:

23. Diagram 23 shows cross section of a drain of a school.
Rajah 23 *menunjukkan keratan rentas suatu longkang di suatu sekolah*.

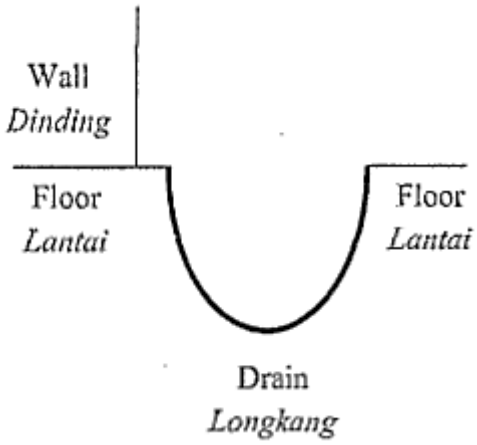


Diagram 23/ *Rajah* 23

Given the shape of the drain can be represented by the quadratic function $y = \frac{2}{5}(x-15)^2 - 40$, where *y* is the depth, in cm, of the drain and *x* is the horizontal distance, in cm, from the wall.

Diberi bentuk longkang tersebut boleh diwakili oleh fungsi kuadratik $y = \frac{2}{5}(x-15)^2 - 40$, *dengan keadaan y ialah kedalaman, dalam* cm, *longkang itu dan x ialah jarak mengufuk, dalam* cm, *dari dinding.*

Find/ *Cari*

(a) the maximum depth, in cm, of the drain.
kedalaman maksimum, dalam cm, *longkang itu*.

[1 mark/ *markah*]

(b) the width, in cm, of the drain.
lebar bukaan, dalam cm, *longkang itu*.

[3 marks/ *markah*]

Answer/*Jawapan*:

(a)

(b)

24.	Four letters have to be selected from word 'PERFECTIONIST'. Find the number of different possible arrangement such that *Empat huruf akan dipilih daripada perkataan 'PERFECTIONIST'.Cari bilangan susunan berbeza yang mungkin jika* (a) the arrangement with only vowels, *susunan tersebut hanya mengandungi huruf vokal,* (b) the arrangement ends with *P* and consist of consonants only. *susunan tersebut berakhir dengan P dan mengandungi konsonan sahaja* [4 marks/*markah*]
	Answer/*Jawapan*:
25.	Sketch the graph of $y = -1 - 3\cos x$ for $0 \leq x \leq 2\pi$. *Lakarkan graf bagi* $y = -1 - 3\,kos\,x$ *bagi* $0 \leq x \leq 2\pi$. [4 marks/*markah*]
	Answer/*Jawapan*

KERTAS SOALAN TAMAT