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

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

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

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

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

5   Volume of revolution
Isi padu kisaran

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

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

GEOMETRY / *GEOMETRI*

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

2   Mid Point/ *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 triangle/ *Luas segi tiga*

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

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

6   $\hat{\mathbf{r}} = \dfrac{x\underline{\mathbf{i}} + y\underline{\mathbf{j}}}{\sqrt{x^2 + y^2}}$

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    $^n P_r = \dfrac{n!}{(n-r)!}$

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

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 / *Min*, $\mu = np$

13    $\sigma = \sqrt{npq}$

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

TRIGONOMETRY/ *TRIGONOMETRI*

1   Arc length, $s = r\theta$

      Panjang lengkok, $s = j\theta$

2   Area of sector, $A = \dfrac{1}{2} r^2 \theta$

      Luas sektor, $L = \dfrac{1}{2} j^2 \theta$

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    $\cos 2A = \cos^2 A - \sin^2 A$
          $= 2\cos^2 A - 1$
          $= 1 - 2\sin^2 A$

8    $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$

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

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

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

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

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

14   Area of triangle / *Luas segitiga*

      $= \dfrac{1}{2} ab \sin C$

For Examiners's Use

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

1 Diagram 1 shows a cultivation plan of jackfruit saplings on a trapezium-shaped plot of land belong to Mr. Shuhaimi. According to the plan, first line can be planted 8 saplings and the next line increase by 2 saplings.

Rajah 1 *menunjukkan pelan penanaman anak pokok nangka di atas sebidang tanah berbentuk trapezium kepunyaan Encik Shuhaimi. Berdasarkan pelan tersebut, baris pertama dapat ditanam* 8 *anak pokok dan baris berikutnya bertambah sebanyak* 2 *anak pokok.*

First line
(8 jackfruit saplings)
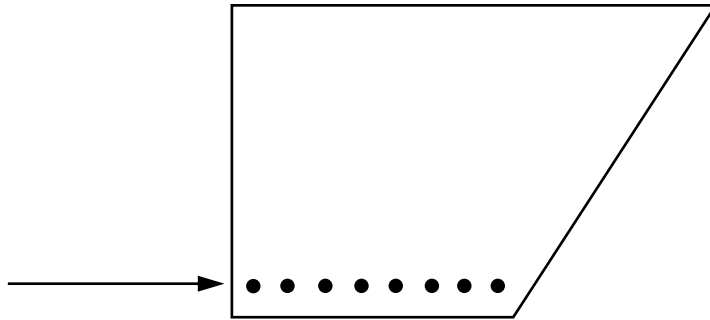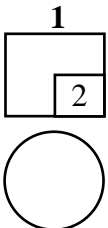*Baris pertama*
(8 *anak pokok nangka*)

Diagram 1 / *Rajah* 1

Find the number of jackfruit saplings must be bought by Mr. Shuhaimi if only 14 line can be planted by him.

Cari bilangan anak pokok nangka yang perlu dibeli oleh Encik Shuhaimi jika hanya 14 *baris sahaja dapat ditanam oleh beliau.*

[2 *marks / markah*]

Answer / *Jawapan*:

1

2

2 Given that $3, \dfrac{9}{2}, \dfrac{27}{4}, \ldots$ is part of a geometric progression.

Diberi bahawa $3, \dfrac{9}{2}, \dfrac{27}{4}, \ldots$ ialah sebahagian daripada suatu janjang geometri.

Find the smallest value of *n* such that the sum of the first *n* term exceeds 220.
Cari nilai n yang terkecil dengan keadaan hasil tambah n sebutan pertama melebihi 220.

[3 *marks* / *markah*]

Answer / *Jawapan*:

2

3

3 A pendulum is kept swinging. The distance traveled by the pendulum for the first swing is 50 cm and for each subsequent swing is $\dfrac{4}{5}$ from the previous swing.

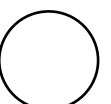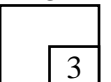Find the total distance traveled by the pendulum before it stops.

Sebuah bandul dibiarkan berayun. Jarak yang dilalui oleh bandul itu bagi ayunan pertama ialah 50 cm dan bagi setiap ayunan berikutnya adalah $\dfrac{4}{5}$ daripada ayunan sebelumnya.

Cari jumlah jarak yang dilalui oleh bandul itu sebelum ia berhenti.

[3 *marks* / *markah*]

Answer / *Jawapan*:

3

3

4 Diagram 4 shows a graph of quadratic function $f(x) = -2(x-3)^2 + k$ where k is a constant. Curve of $y = f(x)$ has a maximum point $(p, 4)$ where p is a constant.
Rajah 4 *menunjukkan graf fungsi kuadratik* $f(x) = -2(x-3)^2 + k$ *dengan keadaan k ialah pemalar. Lengkung* $y = f(x)$ *mempunyai titik maksimum* $(p, 4)$ *dengan keadaan p ialah pemalar.*
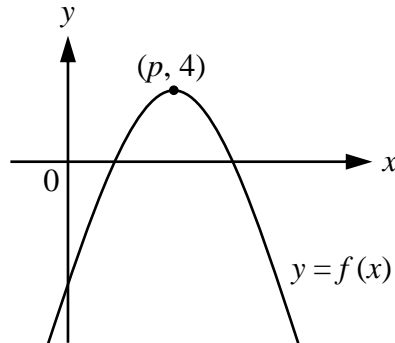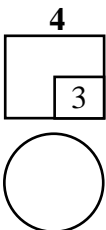

Diagram 4 / *Rajah* 4

Find / *Cari*

(a) value of p / *nilai p*,

(b) value of k / *nilai k*,

(c) the equation of the axis of symmetry of the curve.
persamaan paksi simetri lengkung itu.

[3 *marks* / *markah*]

Answer / *Jawapan*:

5 Diagram 5(a) shows a duck livestock farm belong to Mr. Rizuan. He plans to build a rectangular fence with area more than 20 m^2 as sketch plan on Diagram 5(b).

Rajah 5(a) menunjukkan sebuah ladang ternakan itik kepunyaan Encik Rizuan. Dia bercadang untuk membina pagar berbentuk segi empat tepat dengan keluasan melebihi 20 m^2 seperti lakaran pelan Rajah 5(b).
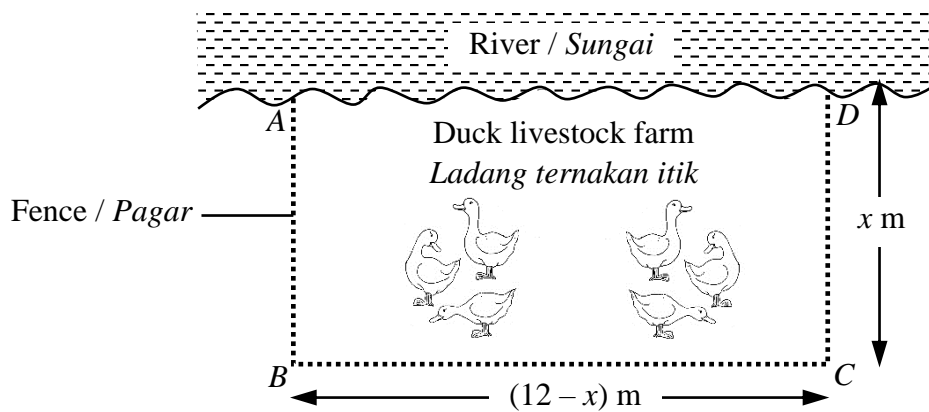

Diagram 5(a) / *Rajah 5(a)*

Diagram 5(b) / *Rajah 5(b)*

Find the range of *x*.
Cari *julat nilai x*.

[4 *marks / markah*]

Answer / *Jawapan*:

6 One of the roots of the quadratic equation $2x^2 + 12x = 3h - 1$ is twice the other root.

Find the value of *h*.

Salah satu punca daripada persamaan kuadratik $2x^2 + 12x = 3h - 1$ adalah dua kali punca yang satu lagi.

Cari nilai h.

[3 *marks / markah*]

Answer / *Jawapan*:

6

3

7 The quadratic equation $kx^2 + 5mx + 9k = 0$ has two equal roots. Given that *k* and *m* are positive, find the positive ratio *k* : *m*.

Persamaan kuadratik $kx^2 + 5mx + 9k = 0$ mempunyai dua punca yang sama. Diberi k dan m adalah positif, cari nisbah positif k : m.

[3 *marks / markah*]

Answer / *Jawapan*:

7

3

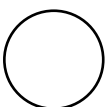**8** Given that $2^{x+1} \cdot 3^{x-2} = W(6^x)$, find the value of *W*.

Diberi $2^{x+1} \cdot 3^{x-2} = W(6^x)$, cari nilai W.

[3 *marks / markah*]

Answer / *Jawapan*:

8

3

9 Given that $6\log_p 6 = 4 + \log_p 576$, find the value of p.

Diberi $6\log_p 6 = 4 + \log_p 576$, *cari nilai p.*

[4 *marks / markah*]

Answer / *Jawapan*:

<div style="text-align:right">

9

4

</div>

10 A relation is represented by the following set of ordered pairs:
Suatu hubungan diwakili oleh pasangan bertertib yang berikut:

$$\{ (1, 1), (2, 4), (3, 9), (4, 16) \}$$

(a) State the type of the relation / *Nyatakan jenis hubungan itu.*

(b) If the ordered pair $(p, 36)$ is part of the relation, state the positive value of p.
Jika pasangan bertertib (p, 36) ialah sebahagian daripada hubungan itu, nyatakan nilai p yang positif.

[2 *marks / markah*]

Answer / *Jawapan*:

<div style="text-align:right">

10

2

</div>

11 The function g is defined by $g : x \rightarrow 7x - 4$.
Fungsi g ditakrif sebagai $g : x \rightarrow 7x - 4$.

Find / *Cari*

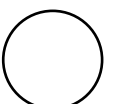(a) $g^{-1}(3)$,   (b) the value of h if $g^{-1}(h) = 2$.
                                        nilai h jika $g^{-1}(h) = 2$.

[3 *marks / markah*]

Answer / *Jawapan*:

<div style="text-align:right">

11

3

</div>

[*Lihat halaman sebelah*

12 Diagram 12 shows a straight line *AB* which is perpendicular to the straight line *BC* at the point *B*. Given the equation of the straight line *AB* ialah $x + 3y - 12 = 0$.

Rajah 12 *menunjukkan satu garis lurus AB yang berserenjang dengan garis lurus BC pada titik B. Diberi persamaan garis lurus AB ialah* $x + 3y - 12 = 0$.
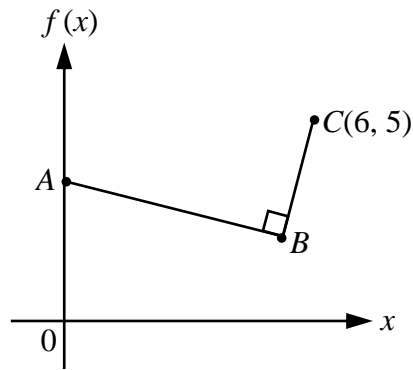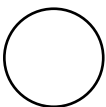

Diagram 12 / *Rajah* 12

Find the equation of the straight line which passes through point *C* and is perpendicular to *AB*.

Cari persamaan garis lurus yang melalui titik C dan berserenjang dengan AB.

[3 *marks* / *markah*]

Answer / *Jawapan*:

13 Diagram 13 shows a triangle *PQR*, where vertices *P* and *Q* lie on the *y*-axis and the *x*-axis respectively. Given the equation of the straight line *PQ* is $\dfrac{x}{10} - \dfrac{y}{5} = 1$ and the area of triangle *PQR* is 30 unit^2.

Rajah 13 *menunjukkan segitiga PQR, dengan keadaan bucu P dan bucu Q masing-masing terletak pada paksi-y dan paksi-x. Diberi persamaan garis lurus PQ ialah* $\dfrac{x}{10} - \dfrac{y}{5} = 1$ *dan luas segitiga PQR ialah* 30 unit^2.
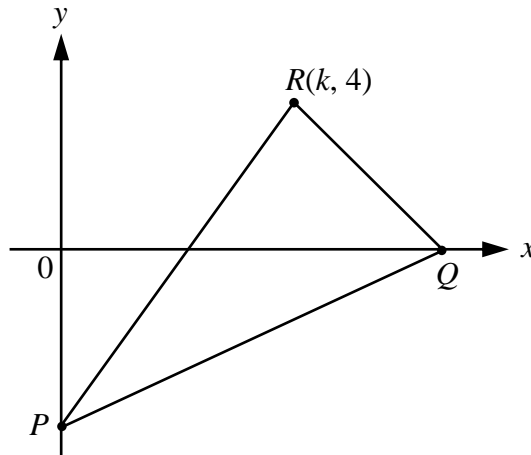
Diagram 13 / *Rajah* 13

Find the value of *k* / *Cari nilai k*.

[3 *marks* / *markah*]

Answer / *Jawapan*:

13

3

14 The vectors $\underset{\sim}{a}$ and $\underset{\sim}{b}$ are non-zero and non-parallel.

Vektor $\underset{\sim}{a}$ *dan* $\underset{\sim}{b}$ *vektor adalah bukan sifar dan tidak selari.*

It is given that $(h - 3)\underset{\sim}{a} = (k + 5)\underset{\sim}{b}$, where *h* and *k* are constants.

Diberi bahawa $(h - 3)\underset{\sim}{a} = (k + 5)\underset{\sim}{b}$, *dengan keadaan h dan k ialah pemalar*,

Find the value of / *Cari nilai*

(a) *h*,   (b) *k*.

[3 *marks* / *markah*]

Answer / *Jawapan*:

14

3

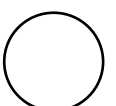**15** Diagram 15 shows vector $\overrightarrow{OM}$ drawn on a Cartesian plane.

Rajah 15 *menunjukkan vektor* $\overrightarrow{OM}$ *dilukis pada suatu satah Cartesian.*
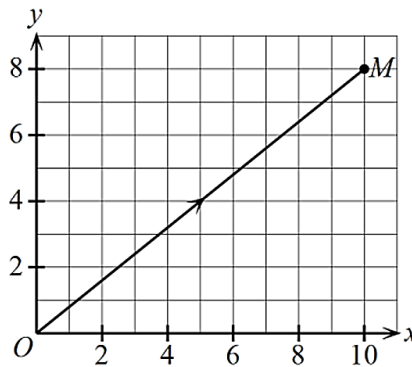
Diagram 15 / *Rajah* 15

Express in form of $\begin{pmatrix} x \\ y \end{pmatrix}$ / *Ungkapkan dalam bentuk* $\begin{pmatrix} x \\ y \end{pmatrix}$

(a) $\overrightarrow{MO}$

(b) Unit vector in the direction of $\overrightarrow{MO}$.

Vektor unit dalam arah $\overrightarrow{MO}$.

[3 *marks / markah*]

Answer / *Jawapan*:

15

3
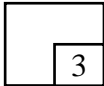
16 The radius of a spherical container decreases from 8 cm to 7.86 cm.
Jejari sebuah bekas berbentuk sfera menyusut daripada 8 cm *kepada* 7.86 cm.

Find the small change in the volume, in π cm^3.
Cari perubahan kecil isipadunya, dalam π cm^3.

[Volume of sphere, $V = \dfrac{4}{3}\pi r^3$ / *Isipadu sfera*, $V = \dfrac{4}{3}\pi j^3$]

[3 *marks / markah*]

Answer / *Jawapan*:

16

3
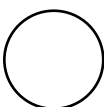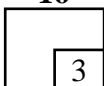
17   Solve the equation $15 \sin^2 x = \sin x + 4 \sin 30°$ for $0° \leq x \leq 360°$.

Selesaikan persamaan $15 \sin^2 x = \sin x + 4 \sin 30°$ *bagi* $0° \leq x \leq 360°$.

[4 *marks / markah*]

Answer / *Jawapan*:

<div align="right">

17

4

</div>

18   Given $\dfrac{d}{dx}\left(\dfrac{x^2}{x+3}\right) = \dfrac{x(x+6)}{(x+3)^2}$. Evaluate the value of $\displaystyle\int_1^2 \dfrac{x(x+6)}{2(x+3)^2}\, dx$.

Diberi $\dfrac{d}{dx}\left(\dfrac{x^2}{x+3}\right) = \dfrac{x(x+6)}{(x+3)^2}$. *Cari nilai bagi* $\displaystyle\int_1^2 \dfrac{x(x+6)}{2(x+3)^2}\, dx$.

[3 *marks / markah*]

Answer / *Jawapan*:

<div align="right">

18

3

</div>

19 Diagram 19 shows a straight line graph obtained by plotting $(y + x)$ againts x^3.

Rajah 19 *menunjukkan graf garis lurus yang diperoleh dengan memplot* $(y + x)$ *melawan* x^3.
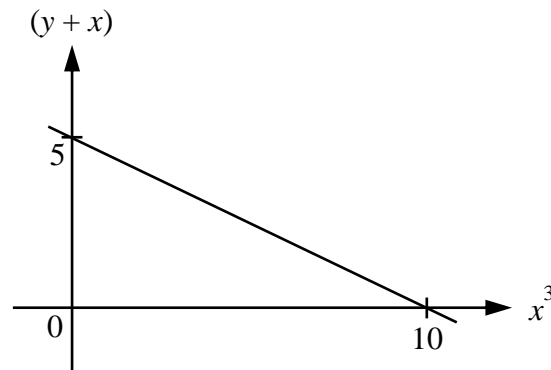
Diagram 19 / *Rajah* 19

Express *y* in terms of *x* / *Ungkapkan y dalam sebutan x*.

[3 *marks* / *markah*]

Answer / *Jawapan*:

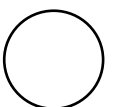**20** Annual meeting of the membership of the Coop Mart SMK Abi is held in the month of November to choose the 15 members of the board of the cooperative school from 12 teachers and 20 students.

Mesyuarat agung tahunan ahli Coop Mart SMK Abi diadakan pada bulan November bagi memilih 15 *orang anggota lembaga koperasi sekolah daripada* 12 *orang guru dan* 20 *orang pelajar*.

Find the number of different ways to choose the member of the board of the cooperative if

Cari bilangan cara berbeza untuk memilih anggota lembaga koperasi jika

(a) there is no restriction,
tiada syarat dikenakan,

(b) 6 teachers and 9 students are choosen.
6 *orang guru dan* 9 orang *pelajar dipilih*.

[4 *marks* / *markah*]

Answer / *Jawapan*:

21 Table 21 shows the number of coloured pens in a box.
Jadual 21 menunjukkan bilangan pen berwarna di dalam sebuah kotak.

Colour *Warna*	Number of pens *Bilangan pen*
Blue / *Biru*	4
Black / *Hitam*	6
Red / *Merah*	8

Table 21 / *Jadual* 21

Two pens are drawn at random from the box.
Dua batang pen dikeluarkan secara rawak daripada kotak itu.

Find the probability that both pens are of the same colour.
Cari kebarangkalian bahawa kedua-dua batang pen itu sama warna.

[3 *marks / markah*]

Answer / *Jawapan*:

21

3

22 Diagram 22 shows a standard normal distribution graph.
Rajah 22 *menunjukkan satu graf taburan normal piawai.*
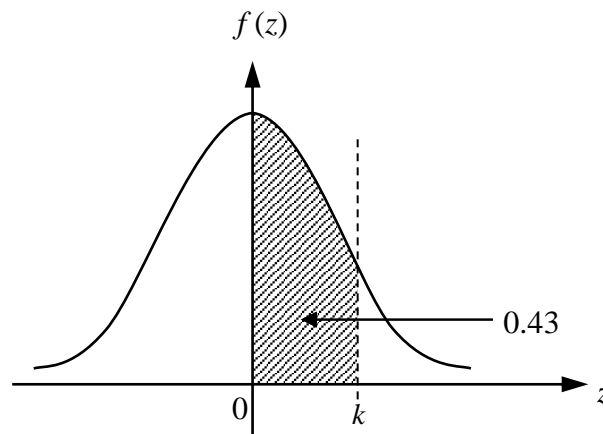
Diagram 22 / *Rajah* 22

(a) Given that $P(0 < z < k) = 0.43$, find the value of k.
Diberi $P(0 < z < k) = 0.43$, *cari nilai k.*

(b) X is a continuous random variable which is normally distributed with a mean μ and a standard deviation 5.
X ialah pembolehubah rawak selanjar yang bertaburan secara normal dengan nilai min μ *dan sisihan piawai* 5.

Find the value of μ when the value of $X = 22.62$ is correspond to the value of k.
Cari nilai μ *apabila nilai X = 22.62 adalah sepadan dengan nilai k.*

[4 *marks / markah*]

Answer / *Jawapan*:

22

4
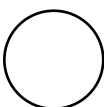
23 Diagram 23 shows a circle with centre *O*. The length of the minor arc *AB* is 13 cm and the angle of the major sector *AOB* is 250°.

Rajah 23 menunjukkan sebuah bulatan dengan pusat O. Panjang lengkok minor AB adalah 13 cm dan sudut sektor major AOB adalah 250°.
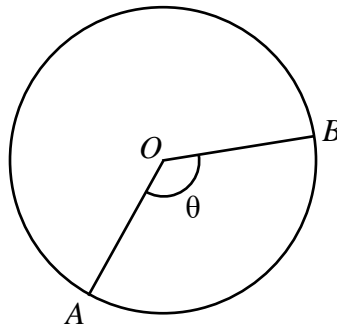
Diagram 23 / *Rajah 23*

Using $\pi = 3.142$ and give the answer correct to three decimal places, find

Dengan menggunakan $\pi = 3.142$ dan berikan jawapan betul kepada tiga tempat perpuluhan, cari

(a) the value of θ in radian / *nilai θ dalam radian*,

(b) the perimeter of major sector *AOB* / *perimeter sektor major AOB*.

[4 *marks* / *markah*]

Answer / *Jawapan*:

23

4

24 The mean of 8 numbers of 2, 3, *p*, 6, 3*p* – 2, 10, 13 and 16 is 8.

Min bagi 8 nombor ialah 2, 3, p, 6, 3p – 2, 10, 13 dan 16 ialah 8.

(a) Find the value of *p* / *Cari nilai p*.

(b) If each number is multiplied by 2 and then 4 is added to it, find the mean.
Jika setiap nombor itu didarabkan dengan 2 dan kemudiannya ditambah dengan 4, cari min.

[4 *marks* / *markah*]

Answer / *Jawapan*:

24

4
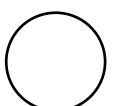
25 Table 25 shows the frequency distribution for the marks obtained by a group of students.
Jadual 25 menunjukkan taburan kekerapan markah bagi sekumpulan murid.

Score *Markah*	**Frequency** *Kekerapan*
15 – 19	1
20 – 24	8
25 – 29	6
30 – 34	5
35 – 39	4

Table 25 / *Jadual* 25

Calculate the standard deviation of the marks.
Hitung sisihan piawai bagi markah itu.

[3 *marks / markah*]

END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT

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

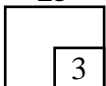| z	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
														Minus / *Tolak*					
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	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

For negative z use relation:

Bagi z negatif guna hubungan:

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

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

$$Q(z) = \int_{k}^{\infty} f(z)\,dz$$
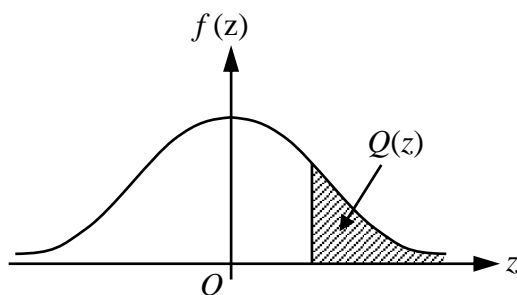
Example / *Contoh*:

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

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

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

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

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 space 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 baharu.

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 page **2** and **3**.

    *Satu senarai rumus disediakan di halaman **2** dan **3**.*

9. The Upper Tail Probability Q(*z*) For The Normal Distribution N(0, 1) Table is provided on page **19**.

    *Jadual Kebarangkalian Hujung Atas Q(z) bagi Taburan Normal N(0, 1) disediakan di halaman **19**.*

10. You may use a scientific calculator.

    Anda dibenarkan menggunakan kalkulator saintifik.

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.