

NO. KAD PENGENALAN

ANGKA GILIRAN

Nama Tingkatan

Sekolah

MODUL PINTAS 2019
TINGKATAN 5

3472/1

ADDITIONAL MATHEMATICS

Kertas 1

Ogos/September

2 jam

Dua jam

**JANGAN BUKA KERTAS PEPERIKSAAN INI
SEHINGGA DIBERITAHU**

1. *Tulis nombor kad pengenalan, angka giliran, nama, tingkatan dan sekolah anda pada petak yang disediakan.*
2. *Kertas peperiksaan 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 peperiksaan ini.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS

KALKULUS

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

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

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

$$4 \quad \text{Area under a curve}$$

Luas di bawah lengkung

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

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

$$5 \quad \text{Volume of revolution}$$

Isi padu kisanan

$$= \int_a^b \pi y^2 \, dx \text{ or (atau)}$$

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

STATISTICS
STATISTIK

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

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

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

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

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

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

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

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

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

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

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

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

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

$$14 \quad Z = \frac{X - \mu}{\sigma}$$

GEOMETRY
GEOMETRI

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

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

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

$$4 \quad \text{Area of triangle / Luas segi tiga} \\ = \frac{1}{2} |(x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3)|$$

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

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

TRIGONOMETRY
TRIGONOMETRI

- | | |
|---|--|
| <p>1 Arc length, $s = r\theta$
<i>Panjang lengkok, $s = j\theta$</i></p> | <p>8 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$
$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$</p> |
| <p>2 Area of sector, $A = \frac{1}{2}r^2\theta$
<i>Luas sektor, $L = \frac{1}{2}j^2\theta$</i></p> | <p>9 $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$
$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$</p> |
| <p>3 $\sin^2 A + \cos^2 A = 1$
$\sin^2 A + \cos^2 A = 1$</p> | <p>10 $\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$</p> |
| <p>4 $\sec^2 A = 1 + \tan^2 A$
$\sec^2 A = 1 + \tan^2 A$</p> | <p>11 $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$</p> |
| <p>5 $\operatorname{cosec}^2 A = 1 + \cot^2 A$
$\operatorname{kosek}^2 A = 1 + \operatorname{kot}^2 A$</p> | <p>12 $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$</p> |
| <p>6 $\sin 2A = 2 \sin A \cos A$
$\sin 2A = 2 \sin A \cos A$</p> | <p>13 $a^2 = b^2 + c^2 - 2bc \cos A$
$a^2 = b^2 + c^2 - 2bc \cos A$</p> |
| <p>7 $\cos 2A = \cos^2 A - \sin^2 A$
$= 2 \cos^2 A - 1$
$= 1 - 2 \sin^2 A$

$\cos 2A = \cos^2 A - \sin^2 A$
$= 2 \cos^2 A - 1$
$= 1 - 2 \sin^2 A$</p> | <p>14 Area of triangle / <i>Luas segi tiga</i>
$= \frac{1}{2} ab \sin C$</p> |

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

- 1 Berjaya Company has 4 vacancies for senior managers where each job has an identical description. 5 men and 3 women have applied for the positions.

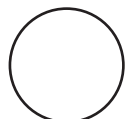
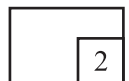
Find the number of ways of selecting four people to fill the positions. [2 marks]

Syarikat Berjaya mempunyai 4 kekosongan untuk pengurus kanan dengan keadaan setiap tugas mempunyai skop kerja yang sama. 5 lelaki dan 3 wanita telah memohon jawatan.

Cari bilangan cara memilih empat orang untuk mengisi jawatan itu. [2 markah]

Answer / Jawapan:

1



- 2 Diagram 2 shows the relation between set A and set B .
Rajah 2 menunjukkan hubungan antara set A dan set B .

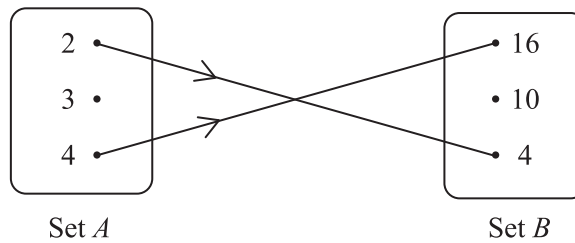


Diagram 2
Rajah 2

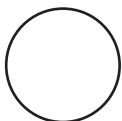
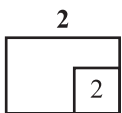
- (a) State the range of the relation.
Nyatakan julat bagi hubungan itu.
- (b) Determine whether the relation is a function.
Tentukan sama ada hubungan itu ialah suatu fungsi.

[2 marks]
[2 markah]

Answer / *Jawapan:*

(a)

(b)



- 3 Given $A(m, 5)$, $B(4, 4)$, $C(n, 2)$ and $D(1, 3)$ are four vertices of a rectangle. The diagonals of AC and BD intersect at K .

Find the value of $m + n$.

[2 marks]

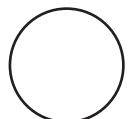
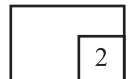
Diberi $A(m, 5)$, $B(4, 4)$, $C(n, 2)$ dan $D(1, 3)$ ialah empat bucu bagi sebuah segi empat tepat. Pepenjuru AC dan BD bersilang di K .

Cari nilai $m + n$.

[2 markah]

Answer / Jawapan:

3



- 4 Given $g : x \rightarrow x + 4$, find
Diberi $g : x \rightarrow x + 4$, cari
- (a) $g(-1)$,
- (b) the value of k such that $g^{-1}(k) = 6$.
nilai k dengan keadaan $g^{-1}(k) = 6$.

[3 marks]
[3 markah]

Answer / *Jawapan*:

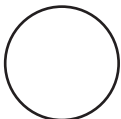
(a)

(b)

4



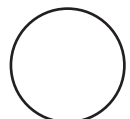
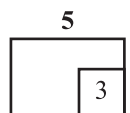
3



- 5 The length and width of the rectangle land is y m and $(y + 30)$ m respectively. If the area of the land is $1\,800\text{ m}^2$, find the dimensions of the land. [3 marks]

Ukuran panjang dan lebar sebidang tanah yang berbentuk segi empat tepat masing-masing ialah y m dan $(y + 30)$ m. Jika luas tanah itu $1\,800\text{ m}^2$, cari ukuran dimensi bagi tanah itu. [3 markah]

Answer / Jawapan:



- 6 (a) It is given that one of the roots of the quadratic equation $x^2 + (q + 2)x - q^2 = 0$, is negative of the other root.

Find the value of the product of the roots. [2 marks]

Diberi bahawa satu punca bagi persamaan kuadratik $x^2 + (q + 2)x - q^2 = 0$, adalah negatif kepada yang satu lagi.

Cari nilai bagi hasil darab punca. [2 markah]

- (b) It is given that the quadratic equation $px^2 + 3qx + 4p = 0$, where p and q are constants, has two equal roots.

Find $p : q$. [2 marks]

Diberi bahawa persamaan kuadratik $px^2 + 3qx + 4p = 0$, dengan keadaan p dan q ialah pemalar mempunyai dua punca yang sama.

Cari $p : q$. [2 markah]

Answer / Jawapan:

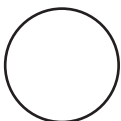
(a)

(b)

6



4



- 7 Diagram 7 shows the graph of a quadratic function $f(x)$.
Rajah 7 menunjukkan graf fungsi kuadratik $f(x)$.

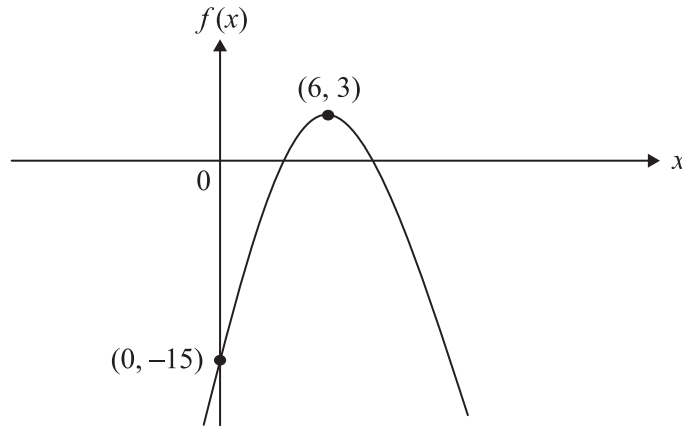


Diagram 7
Rajah 7

- (a) State the equation of the axis of symmetry of the curve.
Nyatakan persamaan paksi simetri lengkung itu.
- (b) Express the equation of the quadratic function shown in the graph in the form of $f(x) = a(x + b)^2 + c$, where a , b and c are constants.
Ungkapkan persamaan fungsi kuadratik seperti yang ditunjukkan di dalam graf dalam bentuk $f(x) = a(x + b)^2 + c$, dengan keadaan a , b dan c ialah pemalar.

[4 marks]

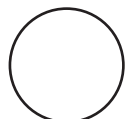
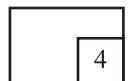
[4 markah]

Answer / Jawapan:

(a)

(b)

7



- 8 A square black colour paper has side length of x cm and a rectangular white colour paper has width of x cm and length of $(3x + 3)$ cm.

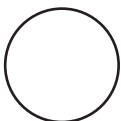
Find the range of values of x if total area for both papers is greater than 1 cm^2 but less than 7 cm^2 . [3 marks]

Sehelai kertas berwarna hitam berbentuk segi empat sama mempunyai panjang sisi x cm dan sehelai kertas berwarna putih berbentuk segi empat tepat mempunyai lebar x cm dan panjang $(3x + 3)$ cm.

Cari julat nilai x jika jumlah luas kedua-dua helai kertas itu adalah lebih besar daripada 1 cm^2 tetapi kurang daripada 7 cm^2 . [3 markah]

Answer / Jawapan:

8



- 9 Given $y = mx^n + 3$, where m and n is a constants, $y = 4$ when $x = 3$ and $y = 7$ when $x = 9$.

Find the value of m and of n .

[4 marks]

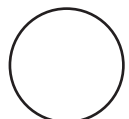
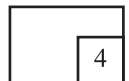
Diberi $y = mx^n + 3$, dengan keadaan m dan n ialah pemalar, $y = 4$ apabila $x = 3$ dan $y = 7$ apabila $x = 9$.

Cari nilai m dan nilai n .

[4 markah]

Answer / Jawapan:

9



For
Examiner's
Use

14

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10 Solve the equation:

Selesaikan persamaan:

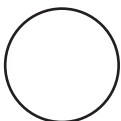
$$\log_3 x + \log_9 3x = -1$$

[3 marks]
[3 markah]

Answer / *Jawapan:*

10

3



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- 11 Sarah's monthly saving form an arithmetic progression $p + 9$, $2p + 10$ and $7p - 1$.

Tabungan bulanan Sarah membentuk suatu jantang aritmetik $p + 9$, $2p + 10$ dan $7p - 1$.

Find

Cari

- (a) the value of p ,
nilai bagi p ,
- (b) the sum of Sarah's saving at first quarter of the year.
jumlah tabungan Sarah pada suku tahun pertama.

[4 marks]

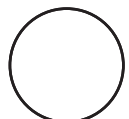
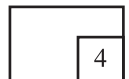
[4 markah]

Answer / Jawaban:

(a)

(b)

11



- 12 The third term and the fifth term of a geometric progression is $\frac{1}{32}$ and $\frac{1}{2\,048}$, where value of the common ratio is positive.

Sebutan ketiga dan kelima suatu jangjang geometri ialah $\frac{1}{32}$ dan $\frac{1}{2\,048}$, dengan keadaan nilai nisbah sepunya adalah positif.

Find

Cari

- (a) the first term,
sebutan pertama,
- (b) the common ratio.
nisbah sepunya.

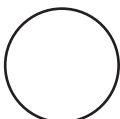
[4 marks]
[4 markah]

Answer / *Jawapan:*

(a)

(b)

12



13 Diagram 13 shows a straight line AB .

Rajah 13 menunjukkan suatu garis lurus AB .

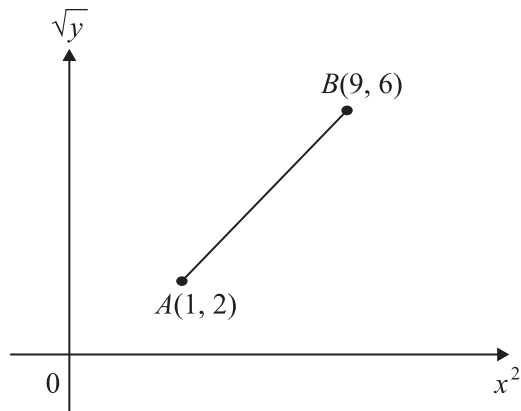


Diagram 13

Rajah 13

Express y in terms of x .

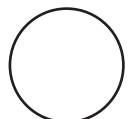
[3 marks]

Ungkapkan y dalam sebutan x .

[3 markah]

Answer / *Jawapan:*

13



- 14 Diagram 14 shows a circle with centre O .

Rajah 14 menunjukkan sebuah bulatan dengan pusat O .

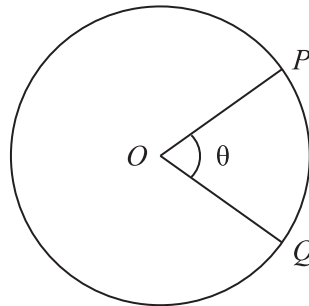


Diagram 14

Rajah 14

The length of the minor arc PQ is 15 cm and the angle of the major sector POQ is 270° .

Panjang lengkok minor PQ ialah 15 cm dan sudut sektor major POQ ialah 270° .

[Use / Guna, $\pi = 3.142$]

Find

Cari

- (a) the value of θ , in radians,
nilai θ , dalam radian,
- (b) the length, in cm, of the radius of the circle.
panjang, dalam cm, jejari bulatan itu.

[3 marks]
[3 markah]

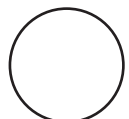
Answer / Jawapan:

(a)

(b)

14

	3
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For
Examiner's
Use

20

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15 Given that $\cos \theta = -\frac{4}{5}$ and $0^\circ < \theta < 180^\circ$.

Find $\tan(\theta - 45^\circ)$.

Diberi bahawa $\cos \theta = -\frac{4}{5}$ dan $0^\circ < \theta < 180^\circ$.

Cari $\tan(\theta - 45^\circ)$.

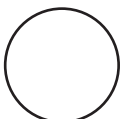
[3 marks]
[3 markah]

Answer / Jawapan:

15



3



3472/1

- 16 The area price of a land in Shah Alam district is RM2 500 / m². Ah Meng spends RM120 000 to buy the area by positions $A(1, 2)$, $B(4, 8)$ and $C(p, 6)$.

Calculate the values of p .

[3 marks]

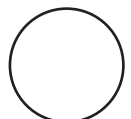
Harga keluasan sebidang tanah di daerah Shah Alam ialah RM2 500 / m². Ah Meng membelanjakan RM120 000 untuk membeli kawasan yang dibatasi oleh kedudukan $A(1, 2)$, $B(4, 8)$ dan $C(p, 6)$.

Hitung nilai-nilai p .

[3 markah]

Answer / Jawapan:

16



17 Given $\underline{p} = \begin{pmatrix} 5 \\ -12 \end{pmatrix}$ and $\underline{q} = \begin{pmatrix} k+2 \\ 3 \end{pmatrix}$.

Diberi $\underline{p} = \begin{pmatrix} 5 \\ -12 \end{pmatrix}$ dan $\underline{q} = \begin{pmatrix} k+2 \\ 3 \end{pmatrix}$.

Find

Cari

(a) the unit vector in the direction of \underline{p} , [2 marks]
vektor unit dalam arah \underline{p} , [2 markah]

(b) the value of k if $\underline{p} + \underline{q}$ is parallel to the y -axis [2 marks]
nilai k jika $\underline{p} + \underline{q}$ adalah selari dengan paksi- y . [2 markah]

Answer / Jawapan:

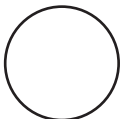
(a)

(b)

17



4



- 18 Given $\mathbf{p} = (2m + n)\mathbf{x} + 3\mathbf{y}$ and $\mathbf{q} = -5\mathbf{x} + (1 - n)\mathbf{y}$.
Find the values of m and n if $\mathbf{p} + \mathbf{q}$ is a zero vector.

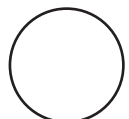
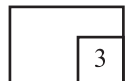
[3 marks]

Diberi $\mathbf{p} = (2m + n)\mathbf{x} + 3\mathbf{y}$ dan $\mathbf{q} = -5\mathbf{x} + (1 - n)\mathbf{y}$.
Cari nilai m dan n jika $\mathbf{p} + \mathbf{q}$ adalah vektor sifar.

[3 markah]

Answer / Jawapan:

18



19 Diagram 19 shows a stone is dropped into a quiet lake.

Rajah 19 menunjukkan seketul batu jatuh ke dalam tasik yang tenang.

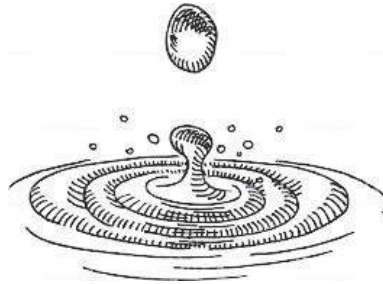


Diagram 19

Rajah 19

The waves move in circles where the radius increases at a speed of 3 cm per second. At the instant, when the radius of the circular wave is 9 cm, how fast, in cm^2s^{-1} is the enclosed area increasing?

Gelombang bergerak dalam lingkaran bulat di mana jejari meningkat pada kelajuan 3 cm sesaat. Seketika itu, apabila jejari gelombang bulat adalah 9 cm, berapa cepat, dalam cm^2s^{-1} , luas kawasan tertutup semakin meningkat?

[Area of circle, $A = \pi r^2$]

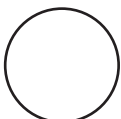
[Luas bulatan, $A = \pi j^2$]

[3 marks]

[3 markah]

Answer / Jawapan:

19



20 If $y = \frac{(3-x)(2-x)}{x}$, find $\frac{dy}{dx}$.

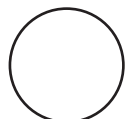
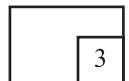
[3 marks]

Jika $y = \frac{(3-x)(2-x)}{x}$, cari $\frac{dy}{dx}$.

[3 markah]

Answer / Jawapan:

20



For
Examiner's
Use

21 Given $\int_1^4 f(x) dx = 5$, find
Diberi $\int_1^4 f(x) dx = 5$, cari

(a) $\int_1^4 \frac{f(x)}{2} dx$,

(b) $\int_1^4 [3 - 2f(x)] dx$.

[3 marks]
[3 markah]

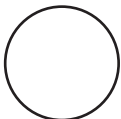
Answer / Jawapan:

(a)

(b)

21

3



- 22 Given a set of data consists 5 number of a, b, c, d and e . Given the median is 8 and the variance is 4. Another set data consists $3a + 2, 3b + 2, 3c + 2, 3d + 2$ and $3e + 2$.

Calculate the value of median and variance.

[3 marks]

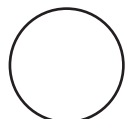
Diberi satu set data mempunyai 5 nombor iaitu a, b, c, d dan e . Set data ini mempunyai nilai median 8 dan varians ialah 4. Satu lagi set data mempunyai $3a + 2, 3b + 2, 3c + 2, 3d + 2$ dan $3e + 2$.

Hitung nilai median dan varians.

[3 markah]

Answer / Jawapan:

22



- 23 Given that the mean of a set of numbers for $\alpha + 2$, $2\alpha + 6$, $\alpha + 1$, $2\alpha + 7$ and $\alpha + 3$ is 5.2

Find the value of α . Hence, determine the value of standard deviation. [4 marks]

Diberi bahawa min suatu set nombor bagi $\alpha + 2$, $2\alpha + 6$, $\alpha + 1$, $2\alpha + 7$ dan $\alpha + 3$ ialah 5.2

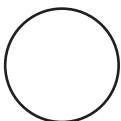
Cari nilai α . Seterusnya, tentukan nilai sisihan piawai. [4 markah]

Answer / Jawapan:

23



4



- 24 In a competition, thirty participants took part for the final stage. If a student answer correctly one question, a card is drawn at random from each bag. A bag contains four cards numbered 1, 3, 5 and 7 respectively. Another bag contains three cards numbered 2, 4 and 6 respectively.

Dalam suatu pertandingan, tiga puluh peserta mengambil bahagian bagi pusingan akhir. Jika seorang pelajar menjawab satu soalan dengan betul, satu kad diambil secara rawak dari setiap beg. Sebuah beg mengandungi empat kad masing-masing bernombor 1, 3, 5 dan 7. Sebuah lagi beg mempunyai tiga kad masing-masing bernombor 2, 4 dan 6.

Find the probability the student get

Cari kebarangkalian pelajar tersebut mendapat

- (a) the sum of two cards drawn is 9,
jumlah dua kad yang diambil adalah 9,
- (b) prime number.
nombor perdana.

[4 marks]

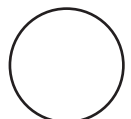
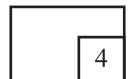
[4 markah]

Answer / Jawapan:

(a)

(b)

24



25 Given Z is a standard normal distribution random variable.

Diberi Z ialah pemboleh ubah rawak piawai bagi taburan normal.

Find the value of h if

Cari nilai h jika

(a) $P(Z > h) = 0.3213$

(b) $P(|Z| > h) = 0.3092$

[3 marks]
[3 markah]

Answer / Jawapan:

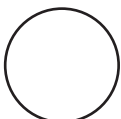
(a)

(b)

25



3



**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									Minus / Tolak									
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36
0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859	4	8	12	15	19	23	27	31	35
0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483	4	7	11	15	19	22	26	30	34
0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121	4	7	11	15	18	22	25	29	32
0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776	3	7	10	14	17	20	24	27	31
0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451	3	7	10	13	16	19	23	26	29
0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148	3	6	9	12	15	18	21	24	27
0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867	3	5	8	11	14	16	19	22	25
0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611	3	5	8	10	13	15	18	20	23
1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379	2	5	7	9	12	14	16	19	21
1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170	2	4	6	8	10	12	14	16	18
1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985	2	4	6	7	9	11	13	15	17
1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823	2	3	5	6	8	10	11	13	14
1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681	1	3	4	6	7	8	10	11	13
1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559	1	2	4	5	6	7	8	10	11
1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455	1	2	3	4	5	6	7	8	9
1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367	1	2	3	4	4	5	6	7	8
1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294	1	1	2	3	4	4	5	6	6
1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233	1	1	2	2	3	4	4	5	5
2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183	0	1	1	2	2	3	3	4	4
2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143	0	1	1	2	2	2	3	3	4
2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110	0	1	1	1	2	2	2	3	3
2.3	0.0107	0.0104	0.0102								0	1	1	1	1	2	2	2	2
			0.00990		0.00964	0.00939	0.00914				3	5	8	10	13	15	18	20	23
								0.00889	0.00866	0.00842	2	5	7	9	12	14	16	16	21
2.4	0.00820	0.00798	0.00776	0.00755	0.00734						2	4	6	8	11	13	15	17	19
						0.00714	0.00695	0.00676	0.00657	0.00639	2	4	6	7	9	11	13	15	17
2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480	2	3	5	6	8	9	11	12	14
2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.00368	0.00357	1	2	3	5	6	7	9	9	10
2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264	1	2	3	4	5	6	7	8	9
2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193	1	1	2	3	4	4	5	6	6
2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139	0	1	1	2	2	3	3	4	4
3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100	0	1	1	2	2	2	3	3	4

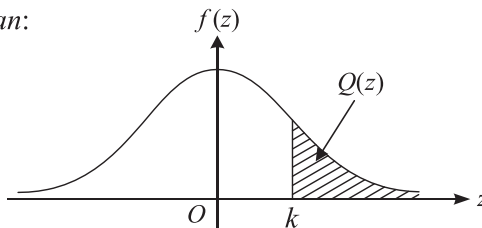
For negative z use relation:

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 peperiksaan 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 peperiksaan.
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** to **4**.
Satu senarai rumus disediakan di halaman 2 hingga 4.
9. The Upper Tail Probability $Q(z)$ For The Normal Distribution $N(0, 1)$ Table is provided on page **31**.
Jadual Kebarangkalian Hujung Atas $Q(z)$ Bagi Taburan Normal $N(0, 1)$ disediakan di halaman 31.
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 peperiksaan ini kepada pengawas peperiksaan di akhir peperiksaan.