



NAMA : _____

KELAS : _____

JABATAN PELAJARAN NEGERI JOHOR

PEPERIKSAAN PERCUBAAN SPM 2011

3472/1

ADDITIONAL MATHEMATICS

Kertas 1

September

2 Jam

Dua jam

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Tulis nama dan kelas anda pada petak yang disediakan.
2. Kertas soalan ini adalah dalam dwibahasa.
3. Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.
4. Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.
5. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan .

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

Kertas soalan ini mengandungi 19 halaman bercetak

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

ALGEBRA

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

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

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

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

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

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

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

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

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

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

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

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

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

CALCULUS

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

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

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

4 Area under a curve

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

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

5 Volume generated

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

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

GEOMETRY

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

2 Midpoint

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

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

$$4 \quad \hat{r} = \frac{x\hat{i} + y\hat{j}}{\sqrt{x^2 + y^2}}$$

5 A point dividing a segment of a line

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

6 Area of triangle =

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

STATISTICS

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

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

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

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

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

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

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

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

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

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

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

12 Mean, $\mu = np$

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

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

TRIGONOMETRY

1 Arc length, $s = r\theta$

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

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

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

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

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

7
$$\begin{aligned} \cos 2A &= \cos^2 A - \sin^2 A \\ &= 2 \cos^2 A - 1 \\ &= 1 - 2 \sin^2 A \end{aligned}$$

8
$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

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

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

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

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

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

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

For
examiner's
use only

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

1 In Diagram 1, set Q shows the images of certain elements of set P .

Dalam Rajah 1, set Q menunjukkan imej bagi unsur-unsur tertentu dari set P .

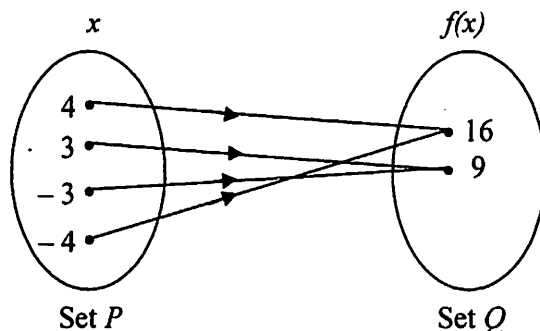


Diagram 1
Rajah 1

(a) State the type of relation between set P and set Q .

Nyatakan jenis hubungan antara set P dengan set Q .

(b) Using the function notation, write a relation between set P and set Q .

Dengan menggunakan tatatanda fungsi, tulis satu hubungan antara set P dengan set Q .

[2 marks]

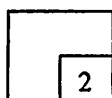
[2 markah]

Answer/ Jawapan :

(a)

(b)

1



2 Given the function $f(x) = |4x - 1|$, find the values of x such that $f(x) = 5$.

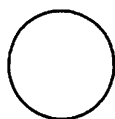
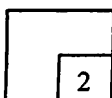
Diberi fungsi $f(x) = |4x - 1|$, cari nilai-nilai x dengan keadaan $f(x) = 5$.

[2 marks]

[2 markah]

Answer/ Jawapan :

2



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5

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- 3 Given the functions $f(x) = \frac{x-2}{3}$ and $g(x) = px + \frac{1}{3}$, find

Diberi fungsi $f(x) = \frac{x-2}{3}$ dan $g(x) = px + \frac{1}{3}$, cari

- (a) $f^{-1}(5)$
 (b) the value of p if the function $f(3-x) = g(x)$.
 nilai p jika fungsi $f(3-x) = g(x)$.

[4 marks]

[4 markah]

Answer / Jawapan :

(a)

(b)

3

4

- 4 A quadratic equation $4x^2 + p = 3(2x - 1)$ has no real roots. Find the range of values of p .

Suatu persamaan kuadratik $4x^2 + p = 3(2x - 1)$ tidak mempunyai punca-punca nyata.

Cari julat bagi nilai p .

[3 marks]

[3 markah]

Answer / Jawapan :

4

3



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examiner's
use only

- 5 Diagram 5 shows the graph of a quadratic function $f(x) = -(x - b)^2 + c$ with the maximum point at $B(3, 5)$. The straight line AC is parallel to the x -axis.

Rajah 5 menunjukkan graf bagi suatu fungsi kuadratik $f(x) = -(x - b)^2 + c$ dengan titik maksimum $B(3, 5)$. Garis lurus AC selari dengan paksi- x .

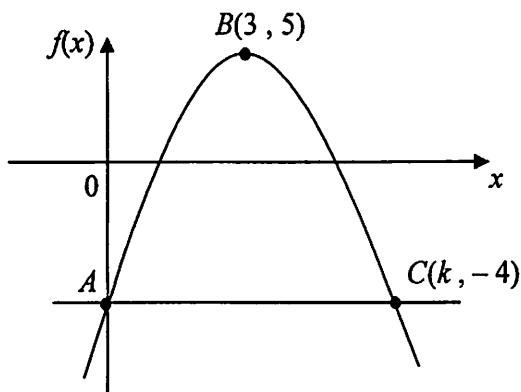


Diagram 5
Rajah 5

- a) Find the value of k .
Cari nilai bagi k .
- b) Find the equation of the curve in the form $y = -(x - b)^2 + c$.
Cari persamaan bagi lengkung dalam bentuk $y = -(x - b)^2 + c$.

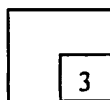
[3 marks]

[3 markah]

Answer/ Jawapan :

- a)
- b)

5



- 6 Find the range of values of x for $x(x - 6) \leq 27$.

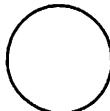
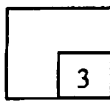
Cari julat bagi nilai-nilai x untuk $x(x - 6) \leq 27$.

[3 marks]

[3 markah]

Answer/ Jawapan :

6



SULIT

7

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examiner's
use only

7 Solve the equation

Selesaikan persamaan

$$8^x = \frac{2}{16^{1-x}}$$

[3 marks]

[3 markah]

Answer / Jawapan :

7

3

8 Given that $\log_2 m = p$, express $\log_{16m} 8m^2$ in terms of p .

Diberi bahawa $\log_2 m = p$, ungkapkan $\log_{16m} 8m^2$ dalam sebutan p .

[4 marks]

[4 markah]

Answer/ Jawapan :

8

4

SULIT

8

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9

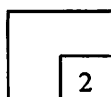
The first term of a geometric progression is p and the sixth term is $32p^6$.
Find the common ratio in terms of p .

*Sebutan pertama satu jangjang geometri ialah p dan sebutan keenamnya ialah $32p^6$.
Carikan nisbah sepunya dalam sebutan p .*

[2 marks]
[2 markah]

Answer/ Jawapan:

9



2

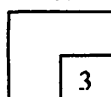
10 Given the second term and fifth term of an arithmetic progression is $2q + 3$ and $12q - 1$ respectively and the common difference is 2. Find the value of q .

Diberi sebutan kedua dan sebutan kelima bagi jangjang aritmetik adalah $2q + 3$ dan $12q - 1$ masing-masing dan nilai sepunya adalah 2. Carikan nilai bagi q .

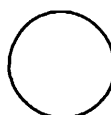
[3 marks]
[3 markah]

Answer/ Jawapan:

10



3



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[Lihat halaman sebelah
SULIT

11 Diagram 11(a) shows the curve $y = 4x^2 - 2$.

Diagram 11(b) shows the straight line graph obtained when $y = 4x^2 - 2$ is expressed in the linear form $Y = -2X + 4$.

Rajah 11(a) menunjukkan suatu graf lengkungan $y = 4x^2 - 2$.

Rajah 11(b) menunjukkan graf garis lurus yang diperoleh apabila $y = 4x^2 - 2$ diungkapkan dalam bentuk linear $Y = -2X + 4$.

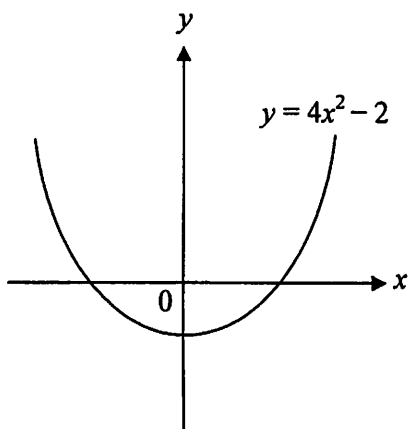


Diagram 11(a)
Rajah 11(a)

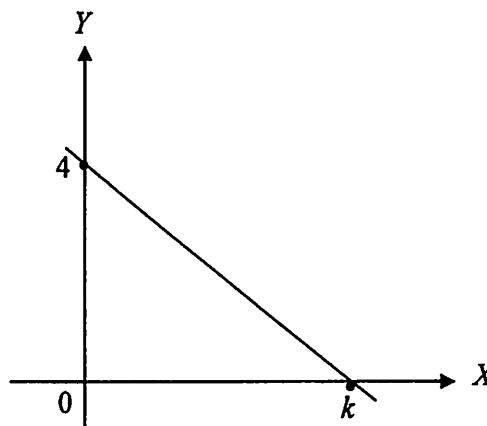


Diagram 11(b)
Rajah 11(b)

(a) Express X and Y in terms of x and y .

Ungkapkan nilai X dan Y dalam sebutan x dan y .

(b) Find the value of k .

Cari nilai bagi k .

[4 marks]

[4 markah]

Answer/ Jawapan:

(a)

(b)

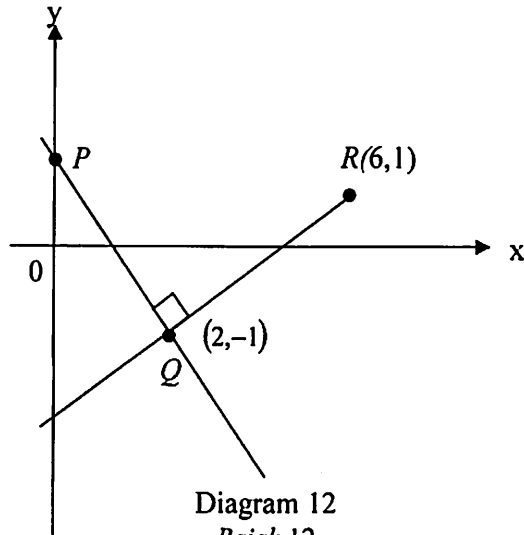
SULIT

*For
examiner's
use only*

- 12 Diagram 12 shows a straight line PQ which is perpendicular to the straight line QR at point Q . The equation of the straight line QR is $2y = x - 4$.

Rajah 12 menunjukkan garis lurus PQ yang berserenjang dengan garis lurus QR pada titik Q .

Persamaan garis lurus QR ialah $2y = x - 4$.



Find the coordinates of P .

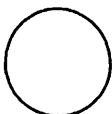
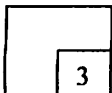
Cari koordinat P .

[3 marks]

[3 markah]

Answer/ *Jawapan:*

12



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[Lihat halaman sebelah
SULIT]

SULIT

11

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use only*

- 13 Diagram 13 shows two vectors, \vec{OA} and \vec{AB} . Given that $|\vec{OA}| = |\vec{OB}|$.
 Rajah 13 menunjukkan dua vektor, \vec{OA} dan \vec{AB} . Diberi bahawa $|\vec{OA}| = |\vec{OB}|$.

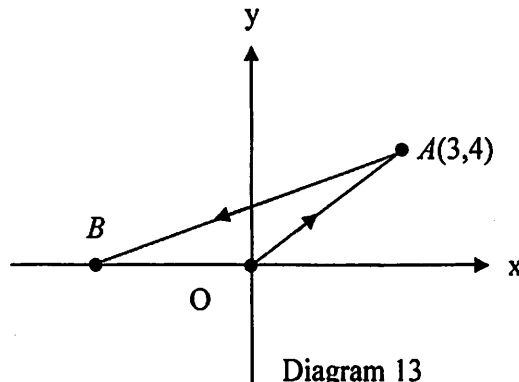


Diagram 13

Rajah 13

Express \vec{AB} in the form $xi + yj$.

Ungkapkan \vec{AB} dalam bentuk $xi + yj$.

[2 marks]

[2 markah]

Answer / Jawapan :

13

2

- 14 Given $\vec{OA} = 3i + 4j$, $\vec{OC} = 4i + 5j$ and $\vec{BD} = (2k - 3)i + 3j$.

Diberi $\vec{OA} = 3i + 4j$, $\vec{OC} = 4i + 5j$ dan $\vec{BD} = (2k - 3)i + 3j$.

Find

Cari

- (a) \vec{AC}
 (b) the value of k if \vec{AC} and \vec{BD} are parallel.
 nilai bagi k jika \vec{AC} dan \vec{BD} adalah selari.

[4 marks]

[4 markah]

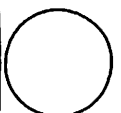
Answer / Jawapan:

(a)

(b)

14

4



SULIT

12

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use only

15 . Solve the equation $2\sin^2 x = \tan 45^\circ - \frac{1}{2}$ for $0^\circ \leq x \leq 360^\circ$.

Selesaikan persamaan $2\sin^2 x = \tan 45^\circ - \frac{1}{2}$ for $0^\circ \leq x \leq 360^\circ$.

[4 marks]

[4 markah]

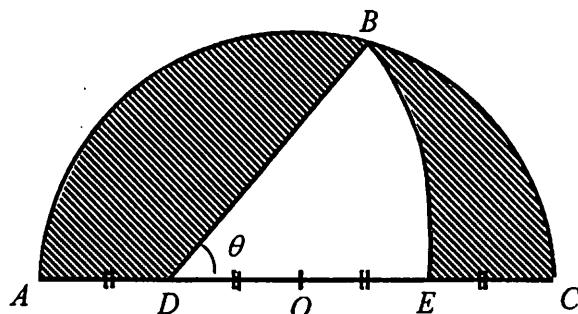
Answer / Jawapan:

15

4

16 Diagram 16 shows a semicircle ABC with centre O and sector DBE with centre D .

Rajah 16 menunjukkan semibulatan ABC berpusat O dan sektor DBE berpusat D .



Rajah 16

Rajah 16

Given $OD = 4$ cm and the length of arc $BE = 5.2$ cm, $AD = DO = OE = EC$.

Diberi $OD = 4$ cm dan panjang lengkok $BE = 5.2$ cm, $AD = DO = OE = EC$.

Calculate

Hitung

(a) the value of θ , in radian.

nilai θ , dalam radian.

(b) the area, in cm^2 , of the shaded region.

luas, dalam cm^2 , kawasan berlorek.

[4 marks]

[use / guna $\pi = 3.142$]

[4 markah]

Answer / Jawapan:

(a)

(b)

15

4

SULIT

13

3472/1

*For
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use only*

- 17 The gradient to the curve $y = 2x^2 + x - 1$ at point A is perpendicular to the straight line $5y = -x$.

Kecerunan lengkung $y = 2x^2 + x - 1$ pada titik A adalah berserenjang dengan garis $5y = -x$.

Find/ Cari

- a) the coordinate of A
koordinat A
- b) the equation of the tangent to the curve at point A
persamaan tangent kepada lengkung pada titik A .

[4 marks]

[4 markah]

Answer/ Jawapan:

(a)

(b)

17

4

- 18 Given that $y = (4r + 1)^2$ and $x = 2r$. Find $\frac{dy}{dx}$ in term of x .

Diberi bahawa $y = (4r + 1)^2$ dan $x = 2r$. Cari $\frac{dy}{dx}$ in term of x .

[3 marks]

[3 markah]

Answer / Jawapan :

18

3

For
examiner's
use only

- 19 . Given $y = \frac{8}{x+1}$, express the approximate change in y in terms of m , when x changes from 3 to $(3 - m)$, where m is a small value.

Diberi $y = \frac{8}{x+1}$, ungkapkan perubahan kecil bagi y dalam sebutan m apabila x berubah daripada 3 to $(3 - m)$, dengan keadaan m ialah satu nilai yang kecil.

[3 marks]

[3 markah]

Answer/ Jawapan :

19

3

- 20 Diagram 20 shows the curve $y = f(x)$.

Rajah 20 menunjukkan garis lengkung $y = f(x)$.

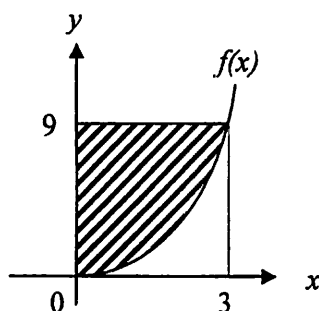


Diagram 20

Rajah 20

If $\int_0^3 y \, dx = 9$, find the area of the shaded region.

Jika $\int_0^3 y \, dx = 9$, cari luas kawasan berlorek.

[2 marks]

[2 markah]

Answer/ Jawapan:

20

2

SULIT

15

3472/1

For
examiner's
use only

21 . Given $\int_1^3 f(x) dx = 3$ and $\int_3^4 f(x) dx = 2$. Find the value of k where k is a constant if

$$\int_1^4 (f(x) + 2kx) dx = 7, \text{ where } k \text{ is a constant.}$$

Diberi $\int_1^3 f(x) dx = 3$ and $\int_3^4 f(x) dx = 2$. Hitungkan nilai k di mana k adalah pemalar

jika $\int_1^4 (f(x) + 2kx) dx = 7$, jika k ialah pemalar.

[3 marks]

[3 markah]

Answer / Jawapan :

21

3

22 A set of positive integers consists of 6, 7, m , 1, 8, 3, 3.

Suatu set nombor positif terdiri daripada 6, 7, m , 1, 8, 3, 3.

(a) Find the value of m if the mean of the data is 5.

Cari nilai bagi m jika min bagi data itu ialah 5.

(b) State the range of the values of m if the median of the data is m .

Nyatakan julat bagi nilai m jika median bagi data itu ialah m .

[3 marks]

[3 markah]

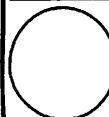
Answer/ Jawapan:

(a)

(b)

22

3



SULIT

16

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examiner's
use only

- 23 A Kenari car can accommodate 1 driver and 3 adults. Find the number of different ways the selections can be made from 3 men and 4 women if,

Sebuah kereta Kenari boleh menempatkan seorang pemandu dan 3 orang dewasa. Cari bilangan cara berlainan pemilihan boleh dilakukan daripada 3 orang lelaki dan 4 orang wanita jika,

(a) there is no restriction for the seating
tiada syarat dikenakan bagi tempat duduk itu

(b) the driver must be a man.
pemandu adalah seorang lelaki

[Assume that all of them can drive]

[Andaikan kesemua mereka boleh memandu]

[4 marks]

[4 markah]

Answer/ Jawapan:

(a)

(b)

23

4

- 24 The probability Bahari being chosen as a monitor is $\frac{3}{8}$ while the probability Dewi being chosen is $\frac{4}{5}$. Find the probability that

Kebarangkalian bahawa Bahari dipilih sebagai ketua ialah $\frac{3}{8}$ manakala kebarangkalian

Dewi dipilih ialah $\frac{4}{5}$. Cari kebarangkalian bahawa

(a) neither of them is chosen as a monitor,
tidak seorang daripada mereka akan dipilih sebagai ketua,

(b) only one of them is chosen as a monitor.
hanya seorang daripada mereka dipilih sebagai ketua.

[4 marks]

[4 markah]

Answer/ Jawapan:

(a)

(b)

24

4

25 X is the mass of the nails produced in a factory and it is a continuous random variable of a normal distribution with a mean of 52 g and standard deviation of 10 g.

X merupakan jisim bagi paku yang dihasilkan di sebuah kilang dan jisim merupakan pembolehubah rawak selanjar bagi taburan normal dengan min 52 g dan sisihan piawai 10 g.

(a) Find the range of z – score if the mass of each nail must be between 53.25g and 54.25g.

Cari julat skor – z jika jisim bagi setiap paku mesti antara 53.25g dan 54.25g.

(b) Diagram 25 shows standard normal distribution graph of the mass of the nails. The probability of $k < z < 0$ is 0.3485.

Rajah 25 menunjukkan graf taburan normal bagi jisim paku. Kebarangkalian bagi $k < z < 0$ ialah 0.3485.

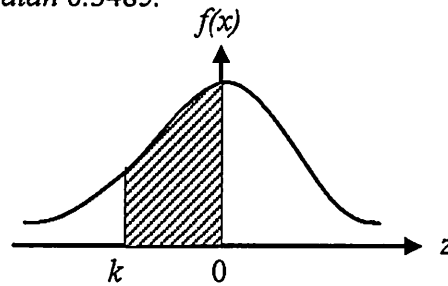


Diagram 12
Rajah 12

Find the mass of a nail which has $P(z < k)$.

Cari jisim bagi sebatang paku yang mempunyai $P(z < k)$

[4 marks]

[4 markah]

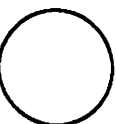
Answer/ Jawapan:

(a)

(b)

25

4



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

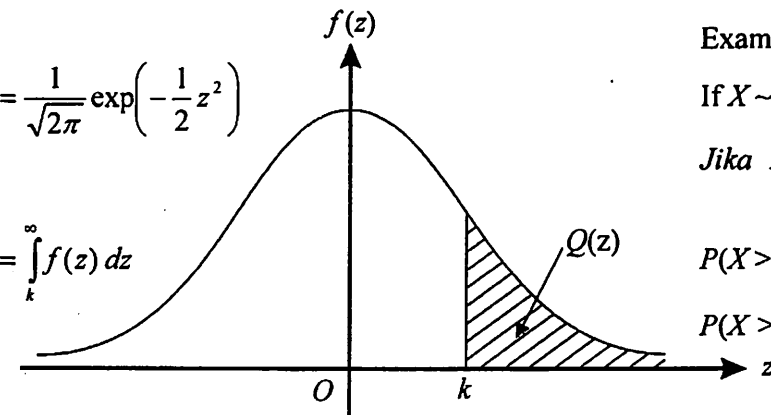
z											Minus / Tolak											
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9			
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	4	8	12	16	20	24	28	32	36			
0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247	4	8	12	16	20	24	28	32	36			
0.2	0.4207	0.4168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

maka

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

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

= 0.0179



Example / Contoh:
 If $X \sim N(0, 1)$, then
 Jika $X \sim N(0, 1)$,
 $P(X > k) = Q(k)$
 $P(X > 2.1) = Q(2.1)$

**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. Give only **one** answer for each question.
Bagi setiap soalan berikan satu jawapan sahaja..
4. Write your answers clearly in the spaces provided in the question paper.
Jawapan hendaklah ditulis dengan jelas dalam ruang yang disediakan dalam kertas soalan.
5. 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 .
6. If you wish to change your answer, cross out the work that you have done. Then write down the new answer.
Sekiranya anda hendak menukar jawapan, batalkan kerja mengira yang telah dibuat. Kemudian tulis jawapan yang baru.
7. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
8. The marks allocated for each question are shown in brackets.
Markah yang diperuntukkan bagi setiap soalan ditunjukkan dalam kurungan.
9. A list of formulae is provided on pages 2 to 3.
Satu senarai rumus disediakan di halaman 2 hingga 3.
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.
Kertas soalan ini hendaklah diserahkan di akhir peperiksaan.

KERTAS SOALAN TAMAT