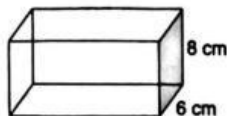


- 1 Antara persamaan berikut, yang manakah mewakili jujukan di bawah?
Which of the following equations represents the sequence below?

5, 24, 79, 188, ...

- A $2n^2 + 3n, n = 1, 2, 3, 4, \dots$
B $3n^3 - 2n + 4, n = 1, 2, 3, 4, \dots$
C $5n^3 - 8n + 8, n = 1, 2, 3, 4, \dots$
D $n^2 + 2n + 2, n = 1, 2, 3, 4, \dots$

- 2 Rajah 1 menunjukkan sebuah kuboid.
Diagram 1 shows a cuboid.



Rajah 1
Diagram 1

Jika isi padu kuboid itu ialah 1 200 cm³, cari jumlah luas permukaan, dalam cm², bagi 25 buah kuboid yang serupa.

If the volume of the cuboid is 1 200 cm³, find the total surface area, in cm², of 25 similar cuboids.

- A 1.99×10^4
B 1.99×10^{-4}
C 3.98×10^4
D 3.98×10^{-4}

- 3 Tan ingin menyimpan RM20 000 dalam akaun simpanan biasa atau akaun simpanan tetap di bank ABC selama 2 tahun. Maklumat berikut menunjukkan maklumat tentang akaun simpanan biasa dan akaun simpanan tetap bagi bank itu.

Tan wants to save RM20 000 into savings account or fixed deposit account in bank ABC for 2 years. The following information shows the information about the savings account and fixed deposit account for the bank.

Akaun simpanan biasa : Kadar faedah tahunan ialah 3%

Savings account : The annual interest rate is 3%

Akaun simpanan tetap : Kadar faedah tahunan ialah 3.5% dikompaun setiap bulan

Fixed deposit account : The annual interest rate is 3.5% compounded every month.

Berapakah beza jumlah wang dalam dua akaun itu selepas 2 tahun?

What is the difference between the total amount in the two accounts after 2 years?

- A RM108.32
B RM116.83
C RM247.98
D RM488.66

4 $345_6 + 214_5 = \text{---}_4$

- A 2011
B 3010
C 32111
D 12300

- 5 Rajah 2 menunjukkan harga sebuah buku dan sebatang pen.

Diagram 2 shows the prices of a book and a pen.



RM202₃



RM1010₂

Rajah 2
Diagram 2

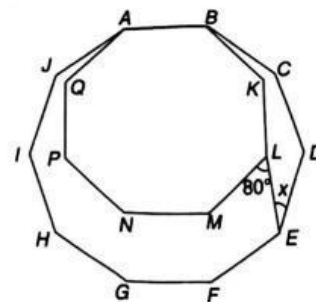
Dalam suatu promosi, harga buku diberi diskaun sebanyak 30%, manakala harga pen pula diberi diskaun sebanyak 20%. Encik Lim membeli 3 buah buku dan 5 batang pen. Dia membayar dengan sekeping wang kertas RM100. Hitung baki wang Encik Lim.

In a promotion, the price of the book is given a 30% discount, while the price of the pen is given a 20% discount. Encik Lim bought 3 books and 5 pens. He paid with a RM100 note. Calculate Encik Lim's balance.

- A RM10001₂
B RM10010₂
C RM122₃
D RM112₄

- 6 Rajah 3 menunjukkan sebuah dekagon sekata dan sebuah oktagon sekata. LE ialah satu garis lurus.

Diagram 3 shows a regular decagon and a regular octagon. LE is a straight line.



Rajah 3
Diagram 3

Cari sudut x.

Find the angle of x.

- A 40°
B 48°
C 53°
D 57°

- 7 Puan Siti memiliki sebuah rumah pangsapuri di Kuala Lumpur. Anggaran bayaran sewa bagi pangsapuri itu ialah RM1 800 setiap bulan dan dia membayar sebanyak RM302.40 setiap setengah tahun untuk cukai taksiran hartanah. Hitung kadar cukai taksiran hartanah bagi pangsapuri itu.

Puan Siti owns an apartment in Kuala Lumpur. The estimated monthly rental for the apartment is RM1 800 and she pays RM302.40 each half-year for the property assessment tax.

Calculate the property assessment tax rate for the apartment.

- A 2.8% C 3.6%
B 1.4% D 5.6%

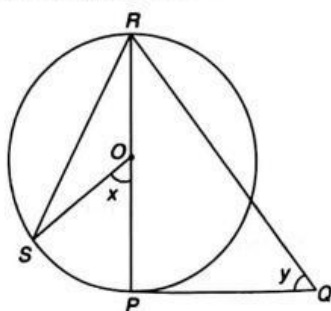
- 8 Rumah Encik Amir mempunyai insurans kebakaran dengan deduktibel sebanyak RM3 000. Syarikat insurans telah menetapkan ko-insurans 70% bagi polisi insurans kebakaran tersebut dan nilai boleh insurans rumah itu ialah RM500 000. Dalam suatu kebakaran, Encik Amir mengalami kerugian sebanyak RM56 000. Hitung bayaran pampasan jika Encik Amir menginsuranskan rumahnya dengan jumlah RM200 000.

Encik Amir's house has a fire insurance with a deductible of RM3 000. The insurance company has specified the co-insurance of 70% for the fire insurance policy and the insurable value of the house is RM500 000. Encik Amir's house caught on fire and he suffered a loss of RM56 000. Calculate the amount of compensation if Encik Amir insures his house at a sum of RM200 000.

- A RM32 000 C RM22 400
B RM29 000 D RM19 400

- 9 Rajah 4 menunjukkan sebuah bulatan. Titik O ialah pusat bulatan dan garis PQ ialah tangen kepada bulatan.

Diagram 4 shows a circle. Point O is the centre of the circle and line PQ is a tangent to the circle.



Rajah 4
Diagram 4

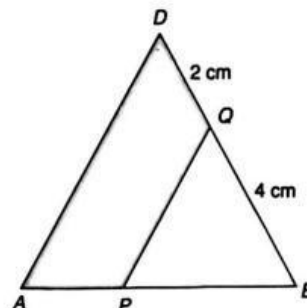
Diberi $5PR = 4QR$ dan $\angle OSR = 30^\circ$. Tentukan nilai $x + y$.

Given that $5PR = 4QR$ and $\angle OSR = 30^\circ$. Determine the value of $x + y$.

- A 83.13° C 113.13°
B 96.87° D 173.13°

- 10 Rajah 5 menunjukkan gabungan dua buah segi tiga, ABD dan PBQ. Segi tiga ABD ialah imej bagi segi tiga PBQ di bawah suatu pembesaran.

Diagram 5 shows a combination of two triangles, ABD and PBD. Triangle ABD is the image of triangle PBQ under an enlargement.



Rajah 5
Diagram 5

Hitung nisbah luas kawasan berlorek kepada luas segi tiga PBQ.

Calculate the ratio of the area of shaded part to the area of triangle PBQ.

- A 3 : 2
B 9 : 4
C 5 : 4
D 5 : 2

- 11 Diberi titik $A(m, 8)$ ialah imej kepada titik $B(-2, 1)$ di bawah suatu translasi $\begin{pmatrix} -3 \\ n \end{pmatrix}$. Hitung nilai $3m - n^2$.

Given that point $A(m, 8)$ is the image of point $B(-2, 1)$

under a translation $\begin{pmatrix} -3 \\ n \end{pmatrix}$. Calculate the value of $3m - n^2$.

- A -64
B -48
C -4
D 64

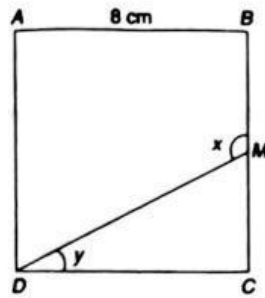
- 12 Permudahkan.
Simplify.

$$\frac{(3k^2m^{-1})^2 \times (2km^{-2})^3}{(2k^{-1}m)^2}$$

- A $9k^5m^{-4}$
B $9k^9m^{-4}$
C $18k^5m^{-10}$
D $18k^9m^{-10}$

- 13 Rajah 6 menunjukkan sebuah segi empat sama ABCD.

Diagram 6 shows a square ABCD.



Rajah 6
Diagram 6

Diberi titik M ialah titik tengah bagi BC. Hitung nilai $\tan x + \tan y$.

Given point M is the midpoint of BC. Calculate the value of $\tan x + \tan y$.

- A $\frac{5}{2}$
- B $-\frac{5}{2}$
- C $-\frac{5}{4}$
- D $-\frac{3}{2}$

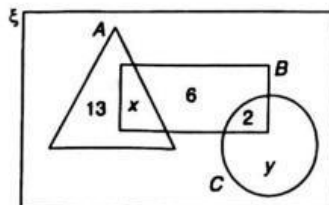
- 14 Diberi $\sin A = -0.8660$, dengan keadaan $90^\circ \leq A \leq 270^\circ$ dan $\cos B = 0.7071$, dengan keadaan $0^\circ \leq B \leq 180^\circ$. Cari nilai $\tan(A + B)$.

Given that $\sin A = -0.8660$, where $90^\circ \leq A \leq 270^\circ$ and $\cos B = 0.7071$, where $0^\circ \leq B \leq 180^\circ$. Find the value of $\tan(A + B)$.

- A 3.732
- B -3.732
- C 0.4663
- D -0.4663

- 15 Gambar rajah Venn dalam Rajah 7 menunjukkan bilangan unsur dalam set A, set B dan set C dengan keadaan $\xi = A \cup B \cup C$.

The Venn diagram in Diagram 7 shows the number of elements in set A, set B and set C where $\xi = A \cup B \cup C$.



Rajah 7
Diagram 7

Diberi $n(A \cup B \cap C) = n(B' \cap A) + 10$ dan $n(\xi) = 32$, cari nilai $x + y$.

Given that $n(A \cup B \cap C) = n(B' \cap A) + 10$ and $n(\xi) = 32$, find the value of $x + y$.

- A 11
- B 12
- C 13
- D 14

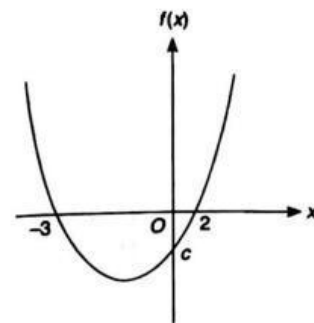
- 16 Diberi set semesta, $\xi = \{x : 2 \leq x < 30, x \text{ ialah integer}\}$, set $A = \{x : x \text{ ialah gandaan bagi } 4\}$ dan set $B = \{x : x \text{ ialah nombor perdana}\}$. Cari bilangan subset bagi $(A \cup B)'$.

Given that the universal set, $\xi = \{x : 2 \leq x < 30, x \text{ is an integer}\}$, set $A = \{x : x \text{ is a multiple of } 4\}$ and set $B = \{x : x \text{ is a prime number}\}$. Find the number of subsets of $(A \cup B)'$.

- A 256
- B 512
- C 2 048
- D 4 096

- 17 Rajah 8 menunjukkan graf yang mewakili fungsi kuadratik $f(x) = (x - a)(x - b)$.

Diagram 8 shows a graph that represents quadratic function $f(x) = (x - a)(x - b)$.



Rajah 8
Diagram 8

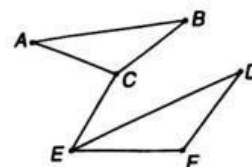
Cari nilai bagi $a + b + c$.

Find the value of $a + b + c$.

- A -6
- B -7
- C -8
- D -9

- 18 Rajah 9 menunjukkan suatu graf.

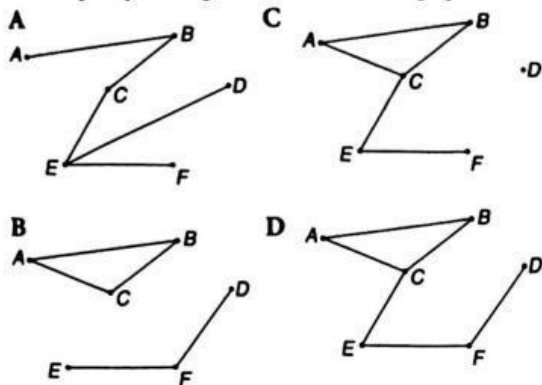
Diagram 9 shows a graph.



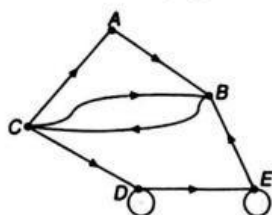
Rajah 9
Diagram 9

Antara yang berikut, yang manakah merupakan satu pokok berdasarkan graf di atas?

Which of the following is a tree based on the graph above?



- 19 Rajah 10 menunjukkan suatu graf terarah.
Diagram 10 shows a directed graph.



Rajah 10
Diagram 10

Antara yang berikut, yang manakah tidak benar?
Which of the following is not true?

- A $d_{out}(B) = 1$ C $d_{out}(C) = 3$
B $d_{in}(D) = 2$ D $d_{in}(E) = 1$

- 20 Rajah 11 menunjukkan satu hujah yang sah dan munasabah.
Diagram 11 shows a valid and sound deductive argument.

Premis 1 / Premise 1:

Premis 2: X tidak boleh dibahagi tepat dengan 3.
Premise 2: X is not divisible by 3.

Kesimpulan: X bukan gandaan bagi 3.
Conclusion: X is not a multiple of 3.

Rajah 11
Diagram 11

Nyatakan Premis 1.
State Premise 1.

- A Jika X boleh dibahagi tepat dengan 3, maka X ialah gandaan bagi 3.
If X is divisible by 3, then X is a multiple of 3.
B Jika X ialah gandaan bagi 3, maka X boleh dibahagi tepat dengan 3.
If X is a multiple of 3, then X is divisible by 3.

- C Semua gandaan 3 boleh dibahagi tepat dengan 3.
All multiples of 3 are divisible by 3.
D Semua nombor yang boleh dibahagi tepat dengan 3 ialah gandaan 3.
All numbers which are divisible by 3 are the multiples of 3.

- 21 Berikut menunjukkan kontrapositif bagi suatu implikasi.

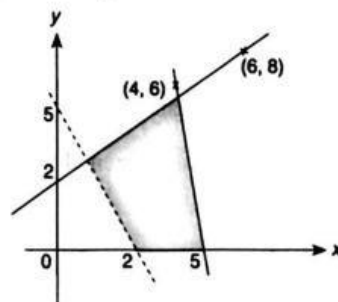
The following shows the contrapositive of an implication.

Jika $3x < 9$, maka $x < 3$.
If $3x < 9$, then $x < 3$.

Antara akas yang berikut, yang manakah betul?
Which of the following converse is correct?

- A Jika $3x > 9$, maka $x > 3$.
If $3x > 9$, then $x > 3$.
B Jika $x > 3$, maka $3x > 9$.
If $x > 3$, then $3x > 9$.
C Jika $3x \geq 9$, maka $x \geq 3$.
If $3x \geq 9$, then $x \geq 3$.
D Jika $x \geq 3$, maka $3x \geq 9$.
If $x \geq 3$, then $3x \geq 9$.

- 22 Rajah 12 menunjukkan suatu rantau berlorek yang mewakili suatu sistem ketaksamaan linear.
Diagram 12 shows a shaded region that represents a system of linear inequalities.



Rajah 12
Diagram 12

Tentukan ketaksamaan yang mewakili kawasan berlorek.

Determine the inequalities that represent the shaded region.

- A $y \leq x + 2$, $2y + 5x \geq 10$, $y \leq -6x + 30$, $y \geq 0$
B $y \leq x + 2$, $2y + 5x > 10$, $y \leq -6x + 30$, $y \geq 0$
C $y \leq x + 2$, $2y + 5x > 10$, $y \geq -6x + 30$, $y \geq 0$
D $y \geq x + 2$, $2y + 5x > 10$, $y \leq -6x + 30$, $y > 0$

- 23 Antara titik berikut, yang manakah memuaskan kedua-dua ketaksamaan linear $2y \leq 3x + 1$ dan $y > -2x - 3$?

Which of the following points satisfies both linear inequalities $2y \leq 3x + 1$ and $y > -2x - 3$?

- A $(-2, 3)$ C $(2, 3)$
B $(-2, -3)$ D $(-2, 2)$

- 24 Permudahkan.
Simplify.

$$\frac{x^2 - 6x + 9}{2x - 6} - \frac{2x^2 + 5x}{4x + 20} + \frac{x}{3x + 15}$$

- A $\frac{4x + 21}{4}$ C $\frac{4x - 9}{4}$
B $\frac{4x - 21}{4}$ D $\frac{4x + 9}{4}$

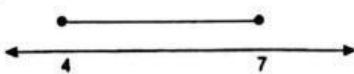
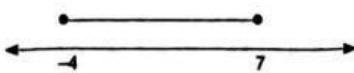
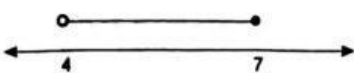
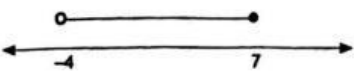
- 25 Diberi bahawa $x^2 - \frac{4x}{y^3 + 1} = 7$, ungkapkan y dalam sebutan x .

Given that $x^2 - \frac{4x}{y^3 + 1} = 7$, express y in terms of x .

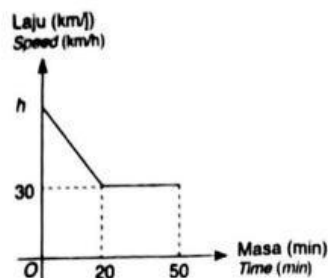
- A $\sqrt[3]{\frac{4x - x^2 + 7}{x^2 - 7}}$
B $\sqrt[3]{\frac{x^2 - 7}{4x - x^2 - 7}}$
C $\sqrt[3]{\frac{x^2 + 7}{4x^2 - x + 7}}$
D $\sqrt[3]{\frac{4x - x^2 - 7}{x^2 + 7}}$

- 26 Garis nombor yang manakah mewakili penyelesaian bagi ketaksamaan linear serentak $\frac{2x - 4}{3} > -4$ dan $\frac{5 - 3x}{8} \geq -2$.

Which of the number lines represents the solution for the simultaneous linear inequalities $\frac{2x - 4}{3} > -4$ and $\frac{5 - 3x}{8} \geq -2$.

- A 
B 
C 
D 

- 27 Rajah 13 menunjukkan graf laju-masa bagi pergerakan sebuah basikal.
Diagram 13 shows the speed-time graph for the movement of a bicycle.



Rajah 13
Diagram 13

Diberi jumlah jarak yang dilalui oleh basikal itu dalam tempoh 50 minit ialah 32.5 km, hitung nilai h .
Given that the total distance travelled by the bicycle in 50 minutes is 32.5 km, calculate the value h .

- A 70 C 80
B 75 D 85

- 28 Jadual 1 menunjukkan hubungan antara tiga pemboleh ubah a , b dan c .
Table 1 shows the relation among three variables a , b and c .

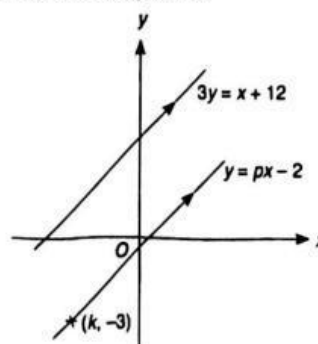
a	b	c
5	16	2

Jadual 1
Table 1

Diberi bahawa $a \propto \frac{\sqrt{b}}{c}$. Antara senarai nilai a , b dan c berikut, yang manakah benar?

Given that $a \propto \frac{\sqrt{b}}{c}$, Which of the following lists of values of a , b and c is true?
A $a = 3, b = 4, c = 1$ C $a = 10, b = 64, c = 2$
B $a = 8, b = 36, c = 2$ D $a = 15, b = 81, c = 3$

- 29 Rajah 14 menunjukkan dua garis lurus.
Diagram 14 shows two straight lines.



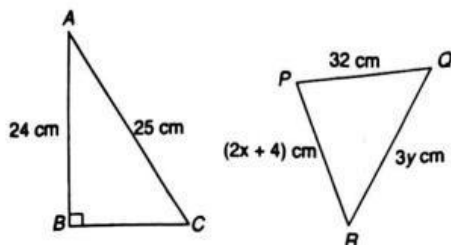
Rajah 14
Diagram 14

Cari nilai bagi k .
Find the value of k .

- A $-\frac{1}{2}$
B -1
C -2
D -3

- 30 Rajah 15 menunjukkan dua buah segi tiga, ABC dan PQR.

Diagram 15 shows two triangles, ABC and PQR.



Rajah 15
Diagram 15

Diberi luas segi tiga ABC adalah sama dengan perimeter segi tiga PQR dan $x + y = 20$, cari nilai $x - y$.

Given that the area of triangle ABC is the same as the perimeter of triangle PQR and $x + y = 20$, find the value of $x - y$.

- A 4
B 5
C 6
D 7

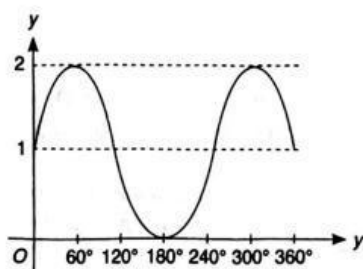
- 31 Permudahkan.
Simplify.

$$(x + 2y)^2 - 3(x - y)^2$$

- A $y^2 + 10xy + 2x^2$
B $y^2 + 10xy - 2x^2$
C $7y^2 + 10xy - 2x^2$
D $7y^2 - 2xy + 2x^2$

- 32 Rajah 16 menunjukkan graf suatu fungsi trigonometri.

Diagram 16 shows a graph of a trigonometric function.



Rajah 16
Diagram 16

Antara fungsi trigonometri berikut, manakah mewakili graf di atas?

Which of the following trigonometric functions represents the graph above?

- A $y = \sin \frac{3}{2}x + 1$
B $y = \sin \frac{1}{2}x + 1$
C $y = \cos / \cos \frac{2}{3}x + 1$
D $y = \cos / \cos \frac{1}{2}x + 1$

- 33 Diberi matriks

Given matrix

$$A = \begin{pmatrix} -2 & 3 & 5 \\ 1 & -4 & 7 \\ 2 & 0 & -2 \end{pmatrix}$$

Cari nilai bagi $a_{12}a_{23} - a_{22}a_{31}$.

Find the value of $a_{12}a_{23} - a_{22}a_{31}$.

- A 13
B 19
C 25
D 29

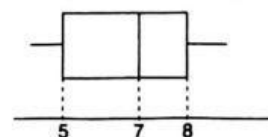
- 34 Antara matriks berikut, yang manakah **bukan** merupakan operasi pendaraban dua matriks yang mungkin?

Which of the following matrices is **not** the possible operation of multiplication of two matrices?

- A $\begin{pmatrix} 2 & 1 & 0 \\ 3 & -1 & 4 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$
B $\begin{pmatrix} -7 & 1 \\ 0 & 3 \end{pmatrix} \begin{pmatrix} 2 & 9 & -6 \\ 4 & 1 & 5 \end{pmatrix}$
C $\begin{pmatrix} 5 & -9 \\ 3 & 1 \\ 2 & 2 \end{pmatrix} \begin{pmatrix} 4 & 0 & 3 \end{pmatrix}$
D $\begin{pmatrix} 8 \\ 6 \end{pmatrix} \begin{pmatrix} 9 & 1 \end{pmatrix}$

- 35 Rajah 17 menunjukkan sebuah plot kotak yang mewakili data 4, p , 7, q , 11 yang disusun dalam urutan menaik.

Diagram 17 shows a box plot that represents the data 4, p , 7, q , 11 which is arranged in an ascending order.



Rajah 17
Diagram 17

Hitung nilai bagi sisihan piawai.

Calculate the value of the standard deviation.

- A 1.89
B 2.45
C 3.25
D 3.84

- 36 Rajah 18 menunjukkan suatu set data.

Diagram 18 shows a set of data.

3	5	11	2	20	14	3	15
2	11	9	3	18	14	y	2

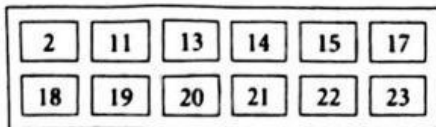
Rajah 18
Diagram 18

Diberi mod ialah 3. Cari median bagi data itu.

Given that the mode is 3. Find the median of the data.

- A 5
B 6
C 7
D 10

- 37 Rajah 19 menunjukkan sebilangan kad yang berlabel dengan nombor di dalam sebuah kotak. Dua keping kad dipilih secara rawak daripada kotak itu.
Diagram 19 shows some cards labelled with numbers in a box. Two cards are picked at random from the box.

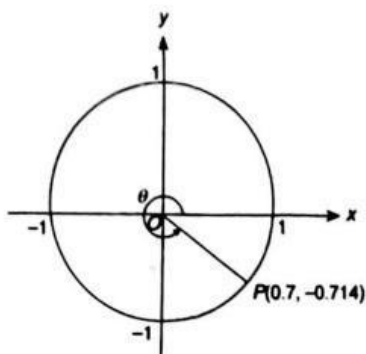


Rajah 19
Diagram 19

Cari kebarangkalian bahawa kad berlabel nombor ganjil atau nombor perdana dipilih.
Find the probability that the card labelled with an odd number or a prime number is chosen.

- A $\frac{2}{3}$
B $\frac{7}{12}$
C $\frac{1}{3}$
D $\frac{5}{12}$

- 38 Rajah 20 menunjukkan satu bulatan unit dengan $0^\circ \leq \theta \leq 360^\circ$.
Diagram 20 shows a unit circle with $0^\circ \leq \theta \leq 360^\circ$.



Rajah 20
Diagram 20

Cari nilai $\sin \theta + \cos \theta$.
Find the value of $\sin \theta + \cos \theta$.

- A -0.306
B 0.306
C 0.014
D -0.014

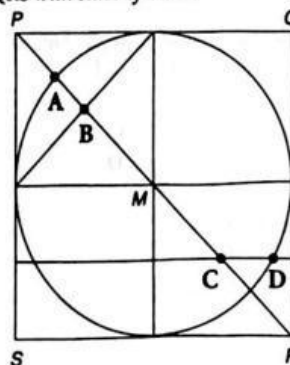
- 39 Gaji bersih bulanan Puan Lim ialah RM6 000. Dia juga menerima RM1 300 setiap bulan hasil sewa rumahnya. Puan Lim menetapkan 10% daripada gajinya sebagai simpanan tetap bulanan. Diberi perbelanjaan tetap bulanan dan perbelanjaan tidak tetap bulannya masing-masing ialah RMx dan RM3 000. Jika aliran tunai bulanan ialah RM200, cari nilai x.

Puan Lim's monthly net salary is RM6 000. She also receives RM1 300 per month from her house rental. Puan Lim sets aside 10% of her monthly salary as fixed monthly savings. Given that the monthly fixed expenses and monthly variable expenses are RMx and RM3 000 respectively. If the monthly cash flow is RM200, find the value of x.

- A 3 500
B 3 370
C 3 970
D 4 100

- 40 Rajah 21 menunjukkan sebuah bulatan yang berpusat M dan terterap di dalam sebuah segi empat sama PQRS dengan panjang sisi 6 cm.

Diagram 21 shows a circle with centre M that is inscribed in a square PQRS with sides of 6 cm.



Rajah 21
Diagram 21

Lokus X ialah satu titik yang sentiasa bergerak kurang daripada 3 cm dari titik M dan lokus Y ialah satu titik yang sentiasa bergerak kurang daripada 3 cm dari garis SR.

Antara titik-titik A, B, C atau D, yang manakah ialah titik persilangan antara lokus X dengan lokus Y?

Locus X is a point that is always moving less than 3 cm from point M and locus Y is a point that is always moving less than 3 cm from line SR.

Which of the points, A, B, C or D, is the intersection point of locus X and locus Y?

KERTAS SOALAN TAMAT
END OF QUESTION PAPER