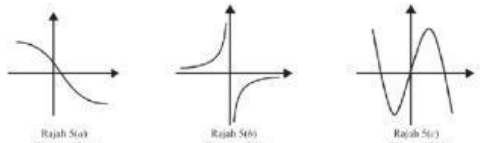
25.06 A Add Math Guru Pakar (Sesi 2) –linear law

[Open]

Inverse function exists if the graph passes the horizontal line test.

1. Lengkapkan Jadual 5 dengan menentukan sama ada fungsi-fungsi dalam Rajah 5 berikut mempunyai fungsi songsang atau sebaliknya dan nyatakan sebabnya.
Complete Table 5 by determining if the following functions in Diagram 5 have inverse function or vice versa and state its reason.



Rajah 5(a)
Diagram 5(a)

Rajah 5(b)
Diagram 5(b)

Rajah 5(c)
Diagram 5(c)

Rajah ***Diagram***	**Fungsi Songsang (Ada/Tiada)** ***Inverse Function* (Yes/No)**	**Sebab** ***Reason***
5(*a*)		
5(*b*)		
5(*c*)		

Jadual 5
Table 5

[3 *markah*]
[3 *marks*]

LIVEWORKSHEETS

25.06 A Add Math Guru Pakar (Sesi 2)

Fungsi diskret: ada titik perpuluhan
Fungsi selanjar: tak ada titik perpuluhan

Mencari fungsi ke-n @ yang lebih daripada 4.
1. Mesti nyatakan fungsi pertama hingga fungsi keempat. Cth : f , f^2, f^3, f^4...
2. Senarai keempat-empat fungsi dan melihat pattern fungsi.

2. (a) Diberi bahawa $g(x) = |11 - 3x|$untuk domain $-2 < x < 2$.
It is given that $g(x) = |11 - 3x|$ *for the domain* $-2 < x < 2$.

(i) Tentukan sama ada g(x) ialah fungsi diskret atau fungsi selanjar. Beri justifikasi anda.
Determine whether g(x) is a discrete function or continuous function. Give your justification.

(ii) Lakar graf *g(x)*.
Sketch the graph of g(x).

[3 markah/ *marks*]

(b) Diberi bahawa $f: x \to x + 3$.
It is given that $f: x \to x + 3$.

(i) Cari $f^n(x)$, dengan keadaan n ialah integer positif.
Find $f^n(x)$, *such that n is a positive integer.*

(ii) Seterusnya, cari h(x) dengan keadaan $hf^{10}(x) = (x - 30)(x + 30)$.
Hence, find h(x) such that $hf^{10}(x) = (x - 30)(x + 30)$.

[5 markah marks]

LIVEWORKSHEETS

25.06 A Add Math Guru Pakar (Sesi 2)

[Open]

3.	Diberi bahawa suatu lengkung $f(x) = 3x^2 - 2x - 5$ bersilang dengan paksi-x pada titik A dan titik B. *It is given that $f(x) = 3x^2 - 2x - 5$ intersects the x-axis at points A and B.* (a) Cari koordinat bagi titik A dan titik B. *Find the coordinates of point A and point B.* [4 markah] [4 marks] (b) (i) Ungkapkan *f(x)* dalam bentuk $a(x + b)^2 + c$ dengan keadaan a, b dan c adalah pemalar. *Express f(x) in the form of $a(x + b)^2 + c$ where a, b and c are constants.* [2 markah] [2 marks] (ii) Seterusnya, tentukan sama ada *f(x)* mempunyai titik pusingan maksimum atau minimum dan nyatakan koordinat tersebut. *Hence, determine whether f(x) has a maximum or minimum turning point and state its coordinates.* [2 markah][2 marks] Jawapan / Answer:

Quadratic curve $f(x) = ax^2 + bx + c$
Set f(x) = 0
Factorise
Find x-values
Coordinates are (x, 0)
For part a) use formulae $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Or (ax + b)(x+c)

b)i- Reshape the equation into a(x+b)2+c

Bii_ titik pusingan minimum if a>0, maximum if a< 0

LIVEWORKSHEETS

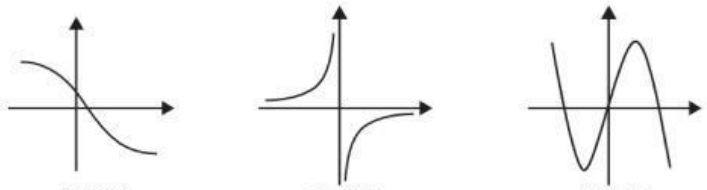
SOALAN 1

FUNGSI

RAMALAN SPM

Lengkapkan Jadual 5 dengan menentukan sama ada fungsi-fungsi dalam Rajah 5 berikut mempunyai fungsi songsang atau sebaliknya dan nyatakan sebabnya.

Complete Table 5 by determining if the following functions in Diagram 5 have inverse function or vice versa and state its reason.



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

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

Rajah 5(*c*)
Diagram 5(c)

Rajah ***Diagram***	**Fungsi Songsang (Ada/Tiada)** ***Inverse Function (Yes/No)***	**Sebab** ***Reason***
5(*a*)	*Ada*	*Garis mengufuk memotong pada satu titik sahaja*
5(*b*)	*Ada*	*Garis mengufuk memotong pada satu titik sahaja*
5(*c*)	*Tiada*	*Garis mengufuk memotong lebih daripada satu titik*

Jadual 5
Table 5

[3 *markah*]
[3 *marks*]

LIVEWORKSHEETS

SOALAN 2

FUNGSI

SPM

(a) Diberi bahawa $g(x) = |1 - 3x|$untuk domain $-2 < x < 2$.

It is given that $g(x) = |1 - 3x|$ *for the domain* $-2 < x < 2$.

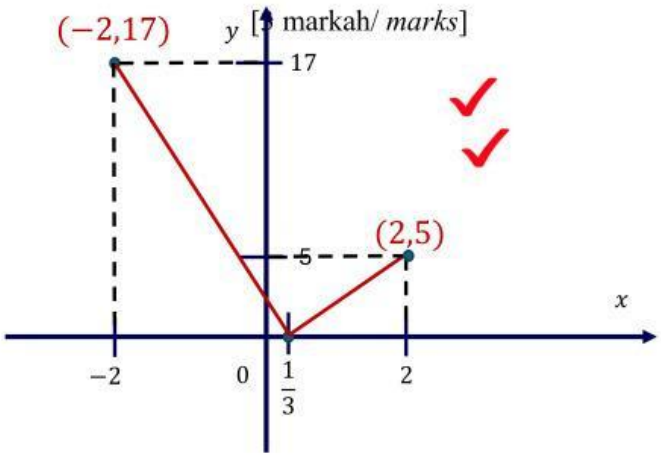
(i) Tentukan sama ada g(x) ialah fungsi diskret atau fungsi selanjar. Beri justifikasi anda.

Determine whether g(x) is a discrete function or continuous function. Give your justification.

(ii) Lakar graf *g(x)*.

Sketch the graph of g(x).

(i) **$g(x)$ ialah fungsi selanjar & Titik-titik disambung dengan garis lurus**



1. **Graf mesti lukis *dotted line* @ tulis koordinat titik.**
2. **Pastikan pantulan kena paksi-x**
3. **Label paksi dan 0**

LIVEWORKSHEETS

SOALAN 2

FUNGSI

SPM

(b) Diberi bahawa $f: x \rightarrow x + 3$.

It is given that $f: x \rightarrow x + 3$.

(i) Cari $f^n(x)$, dengan keadaan n ialah integer positif.

Find $f^n(x)$, *such that n is a positive integer.*

(ii) Seterusnya, cari h(x) dengan keadaan $hf^{10}(x) = (x - 30)(x + 30)$.

Hence, find h(x) such that $hf^{10}(x) = (x - 30)(x + 30)$.

[5 markah marks]

Mencari fungsi ke-n @ yang lebih daripada 4.

1. Mesti nyatakan fungsi pertama hingga fungsi keempat. Cth : f , f^2, f^3, f^4...
2. Senarai keempat-empat fungsi dan melihat pattern fungsi.

$\boldsymbol{f(x) = x + 3}$.

$f^2(x) = ff(x)$

$f[f(x)]$

$f[x + 3]$

$[x + 3]$
$+ 3$

$\boldsymbol{x + 6}$

$f^3(x)$
$= f^2 f(x)$

$f^2[f(x)]$

$f^2[x + 3]$

$[x + 3] + 6$

$\boldsymbol{x + 9}$

$f^4(x)$
$= f^3 f(x)$

$f^3[f(x)]$

$f^3[x + 3]$

$[x + 3] + 9$

$\boldsymbol{x + 12}$

$fn(x) = x + 3n$

LIVEWORKSHEETS

SOALAN 2

FUNGSI

SPM

(b) Diberi bahawa $f: x \rightarrow x + 3$.

It is given that $f: x \rightarrow x + 3$.

(i) Cari $f^n(x)$, dengan keadaan n ialah integer positif.

Find $f^n(x)$, *such that n is a positive integer.*

$$\boldsymbol{f^n(x) = x + 3n}$$

(ii) Seterusnya, cari h(x) dengan keadaan $hf^{10}(x) = (x - 30)(x + 30)$.

Hence, find h(x) such that $hf^{10}(x) = (x - 30)(x + 30)$.

[5 markah marks]

$$hf^{10}(x) = (x - 30)(x + 30)$$

$$h[f^{10}(x)] = (x - 30)(x + 30)$$

$$h(x) = ((x - 30) - 30)((x - 30) + 30)$$

$$h(x)$$

$$\boldsymbol{h(x) = x^2 - 60x}$$

$$f^{10}(x) = x + 3(10)$$

$$y + 30 = x$$

$$y = x - 30$$

$$f^{-10}(x) = x - 30$$

LIVEWORKSHEETS

SOALAN 3

FUNGSI KUADRATIK

RAMALAN SPM

Diberi bahawa suatu lengkung $f(x) = 3x^2 - 2x - 5$ bersilang dengan paksi-x pada titik A dan titik B.

It is given that $f(x) = 3x^2 - 2x - 5$ *intersects the x-axis at points A and B.*

(a) Cari koordinat bagi titik A dan titik B.

Find the coordinates of point A and point B.

[4 markah] [4 marks]

(b) (i) Ungkapkan *f(x)* dalam bentuk $a(x + b)^2 + c$ dengan keadaan a, b dan c adalah pemalar.

Express f(x) in the form of $a(x + b)^2 + c$ *where a, b and c are constants.*

[2 markah] [2 marks]

(ii) Seterusnya, tentukan sama ada *f(x)* mempunyai titik pusingan maksimum atau minimum dan nyatakan koordinat tersebut.

Hence, determine whether f(x) has a maximum or minimum turning point and state its coordinates.

[2 markah][2 marks]

a) $f(x) = 3x^2 - 2x - 5$

$f(x) = 0, \quad 3x^2 - 2x - 5 = 0$ ✓

$(3x - 5)(x + 1) = 0$

$x = \frac{5}{3} \qquad x = -1$ ✓

$A = \left(\frac{5}{3}, 0\right)$ ✓ $B = (-1, 0)$ ✓

LIVEWORKSHEETS

SOALAN 3

FUNGSI KUADRATIK

RAMALAN SPM

Diberi bahawa suatu lengkung $f(x) = 3x^2 - 2x - 5$ bersilang dengan paksi-x pada titik A dan titik B.

It is given that $f(x) = 3x^2 - 2x - 5$ intersects the x-axis at points A and B.

(a) Cari koordinat bagi titik A dan titik B.

Find the coordinates of point A and point B.

[4 markah] [4 marks]

(b) (i) Ungkapkan *f(x)* dalam bentuk $a(x + b)^2 + c$ dengan keadaan a, b dan c adalah pemalar.

Express f(x) in the form of $a(x + b)^2 + c$ where a, b and c are constants.

[2 markah] [2 marks]

(ii) Seterusnya, tentukan sama ada *f(x)* mempunyai titik pusingan maksimum atau minimum dan nyatakan koordinat tersebut.

Hence, determine whether f(x) has a maximum or minimum turning point and state its coordinates.

[2 markah][2 marks]

b(i) $f(x) = 3x^2 - 2x - 5$

$$= 3\left[x^2 - \frac{2}{3}x - \frac{5}{3}\right]$$

$$= 3\left[x^2 - \frac{2}{3}x + \left(\frac{-2/3}{2}\right)^2 - \left(\frac{-2/3}{2}\right)^2 - \frac{5}{3}\right]$$

$$= 3\left[\left(x - \frac{1}{3}\right)^2 - \frac{16}{9}\right]$$

$$= 3\left(x - \frac{1}{3}\right)^2 - \frac{16}{3}$$

b(ii) $f(x)$ **mempunyai titik pusingan minimum kerana** $a > 0$ **pada koordinat** $\left(\frac{1}{3}, -\frac{16}{3}\right)$.

LIVEWORKSHEETS

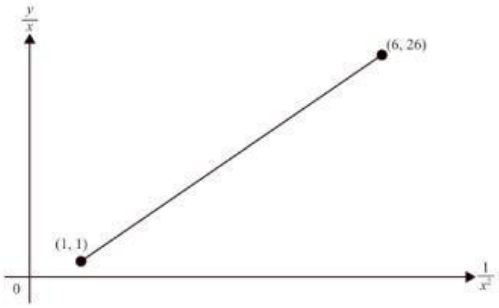
SOALAN 4

HUKUM LINEAR

TRIAL SPM

Rajah 12 menunjukkan graf garis lurus yang diperoleh dengan memplot $\frac{y}{x}$ melawan $\frac{1}{x^2}$

Diagram 12 shows a straight line graph obtained when is plotted $\frac{y}{x}$ *against* $\frac{1}{x^2}$



Rajah 12
Diagram 12

Cari
Find

(a) nilai x apabila $\frac{y}{x} = 4$
the value of x when $\frac{y}{x} = 4$

(b) nilai a dan nilai b jika hubungan antara a dan b boleh diungkapkan dalam bentuk $y = \frac{a}{x} + bx$
the value of a and of b if the relationship of a and b can be expressed in the form of $y = \frac{a}{x} + bx$.

[5 markah/ 5 *marks*]

a) $m = \frac{26-1}{6-1}$

$= 5$

$\frac{y}{x} - 1 = 5\left(\frac{1}{x^2} - 1\right)$ ✓

$\frac{y}{x} = 5\left(\frac{1}{x^2}\right) - 4$

$4 = 5\left(\frac{1}{x^2}\right) - 4$

$8 = \frac{5}{x^2}$ $\quad x = \sqrt{\frac{5}{8}}$ ✓

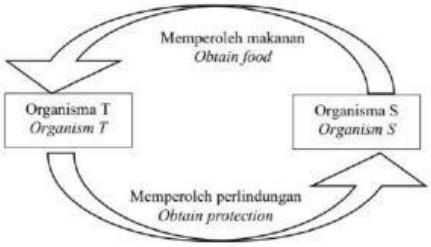
b) $\frac{y}{x} = 5\left(\frac{1}{x^2}\right) - 4 \quad \times x$

$y = \frac{5}{x} - 4x$ ✓

LIVEWORKSHEETS

[Open]

33 Rajah 16 di bawah menunjukkan interaksi antara dua organisma.
Diagram 16 below shows the interaction between two organisms.



Rajah 16/ *Diagram* 16

Apakah jenis interaksi antara organism S dan T?
What is the type of interaction between organisms S and T?

A Komensalisme
Commensalism

B Saprofitisme
Saprophytism

C Parasitisme
Parasitism

D Mutualisme
Mutualism

LIVEWORKSHEETS

26.06 A Biologi : 2025 Trial SBP Paper 1

[Open]

Trial Terengganu

2.	A
3.	C

Trial SBP

3. C
4. B
33. D

LIVEWORKSHEETS

27.06 A: Add math guru pakar sesi 2- coordinate geometri

[Open]

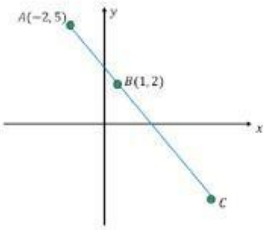
(a) Ratio on a straight line → find C---guna formula tembereng garis
(b) Area of triangle → find k guna formula 23
(c) Perpendicular line → find equation

20. Pembahagi tembereng garis

$$(x, y) = \left(\frac{mx_1 + nx_2}{m+n}, \frac{my_1 + ny_2}{m+n}\right)$$

23.

$$\text{Luas} = \frac{1}{2}\left|\begin{matrix}(x_1y_2 + x_2y_3 + x_3y_1) \\ -(x_2y_1 + x_3y_2 + x_1y_3)\end{matrix}\right|$$

11 .	Rajah menunjukkan garis lurus ABC dan BD pada satu satah Cartes. Diberi bahawa $A(-2,5)$ dan $B(1,2)$. *Diagram shows the straight lines ABC and BD on a Cartesian plane. It is given that $A(-2,5)$ and $B(1,2)$.*  (a) Diberi B membahagi tembereng garis AC dengan nisbah $AB: BC = 1: 3$. Cari koordinat C. *Given B divides the line segment AC with a ratio $AB: BC = 1: 3$. Find the coordinates of C.* [2 markah / 2 marks] (b) Titik D terletak pada paksi-x dengan koordinat $(k,0)$. Cari nilai-nilai yang mungkin bagi k jika luas $\triangle ACD$ ialah $20\ unit^2$. *Point D lies on the x-axis with coordinates $(k,0)$. Find the possible values of k if the area of $\triangle ACD$ is $20\ unit^2$.* [4 markah / 4 marks] (c) Garis lurus L adalah berserenjang dengan garis lurus ABC dan melalui titik B. Cari persamaan garis lurus L dalam bentuk pintasan. *Straight line L is perpendicular to straight line ABC and passes through point B. Find the equation of straight line L in intercept form.* [4 markah / 4 marks]

LIVEWORKSHEETS

27.06 A: Add math guru pakar sesi 2- taburan kebarangkalian

[Open]

13 (a) Tentukan jenis pemboleh ubah rawak setiap situasi yang berikut dengan melengkapkan Jadual 1.
Determine the type of the random variable for each following situation by completing the Table 1.

	Situasi *Situation*	Jenis Pemboleh Ubah Rawak *Type of Random Variable*
(i)	Indeks Berat Badan bagi murid-murid di sebuah sekolah. *The Body Mass Index of students in a school.*	
(ii)	Bilangan kali mendapat nombor enam selepas melontar sebuah dadu adil. *The number of times getting number six after throwing a fair dice.*	
(iii)	Bilangan kali sebuah pasukan bola sepak menang dalam suatu pertandingan. *The number of times a football team wins in a tournament.*	

Jadual 1
Table 1

[3 markah]
[3 marks]

TABURAN KEBARANGKALIAN

NOTA

Taburan Binomial

$X \sim B(n, p) \rightarrow X$ pemboleh ubah rawak diskret ; $X = 0, 1, 2, 3 \ldots, n$

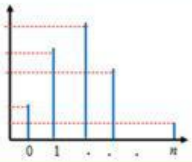
$P(X = r) = {}^{n}C_{r} p^{r} q^{n-r}$

$P(X = 0) + P(X = 1) + \cdots + P(X = n) = 1$

$P(X \leq 1) = P(X = 0) + P(X = 1)$

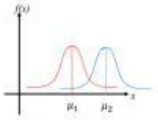
$P(X > 1) = 1 - P(X = 0) - P(X = 1)$

- Min, $\mu = np$
- Varians, $\sigma^2 = npq$
- Sisihan piawai, $\sigma = \sqrt{npq}$

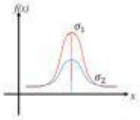


Taburan Normal

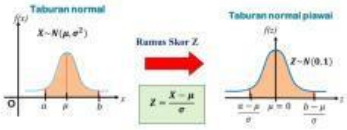
Tatatanda taburan normal bagi pemboleh ubah X ditulis sebagai $X \sim N(\mu, \sigma^2)$



$\mu_1 < \mu_2$



$\sigma_1 < \sigma_2$



Mencari kebarangkalian

LIVEWORKSHEETS

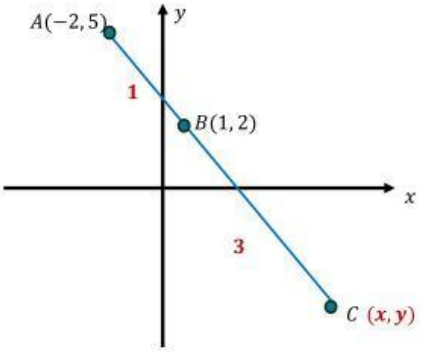
SOALAN 11

GEOMETRI KOORDINAT

KLON SPM

Rajah menunjukkan garis lurus ABC dan BD pada satu satah Cartes. Diberi bahawa $A(-2,5)$ dan $B(1,2)$.

Diagram shows the straight lines ABC and BD on a Cartesian plane. It is given that $A(-2,5)$ and $B(1,2)$.



$$(1,2) = \left(\frac{1(x)+3(-2)}{1+3}, \frac{1(y)+3(5)}{1+3}\right)$$

$$\frac{1(x)+3(-2)}{1+3} = 1$$

$$x = 10$$

$$\frac{1(y)+3(5)}{1+3} = 2$$

$$y = -7$$

$$C = (10, -7)$$

(a) Diberi B membahagi tembereng garis AC dengan nisbah $AB : BC = 1 : 3$. Cari koordinat C.

Given B divides the line segment AC with a ratio $AB : BC = 1 : 3$. Find the coordinates of C.

[2 markah / 2 marks]

LIVEWORKSHEETS