STUDENT WORKSHEET

Material: Function Composition

For Class XI Semester 2

SCHOOL

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Group:

Member:

1.

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Study Guide:

1. Pray before working on the LKPD.
2. Use the learning resources of the independent curriculum student handbook, ppt material.
3. Please read and understand the LKPD carefully.
4. Follow the steps of the activities in the LKPD.
5. If there is anything you don't understand, please ask the teacher.
6. The allocation of work is divided as follows:
7. Activities 1 and 2 are done at meeting 1.
8. Activities 3 and 4 are done at meeting 2.
9. The results of the group work will be presented in front of the class.
10. Good luck!

Learning objectives: ✕

Through the Problem Based Learning (PBL) model with the TPACK approach, based on PPP (Faith, devotion to God Almighty and noble character, mutual cooperation, critical thinking) and discussion methods, brainstorming, questions and answers, lectures (conditions) students (audience) are able to:

1. identify the concept of function,
2. identify the concept of function composition,
3. identify the concept of function,
4. solve contextual problems in everyday life related to function composition.

A function is a relation that connects one member of a set to exactly one member of another set.

| a | Relasi: Fungsi | b | Relasi: Fungsi |
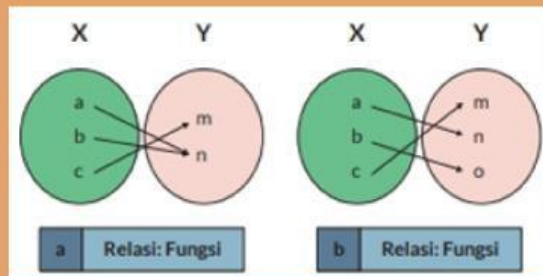
Understanding domain, codomain, and range

- Domain or origin area is a set whose members consist of the first elements of a relation.
- Codomain or friend area is a set whose members consist of the second elements of a relation.
- Range or result area is a set whose members consist of the second elements that have a partner with the first elements of a relation.
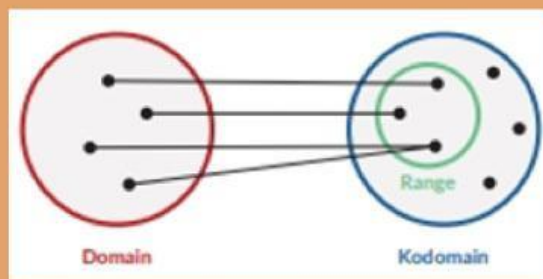
Function Composition Definition

If g : A   B and f : B   C are two functions, then the composition of the two functions f (g (x)) is expressed by the notation (f   g)(x) is a function from domain A to codomain C. The composition of functions can be understood through the following arrow diagram:
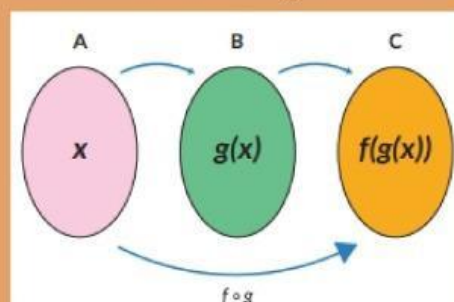
✷Material Summary✷

Given f, g, and h are functions, in the function composition operation they have the following properties:

- In function composition operations, the commutative property does not apply, namely:

$$g \circ f \neq f \circ g$$

- In the function composition operation, the associative property applies, namely:

$$f \circ (g \circ h) = (f \circ g) \circ h$$

Please watch the following video!

Material Summary

Please watch the following video!

You can also review this material from this link

Exercises

Given f(x) = 2x + 1 and g(x) = x - 2. Determine:
1. (f o g)(x).
2. (f o g)(4) and (f o g)(-2)

Solution (1):

(f o g)(x) = f(g(x))

= f(. . . - . . .)

=   . . . (x - 2) + . . .

= 2x - . . . + 1

= . . . - . . .

So, (f o g)(x) = . . . - . . .

Solution (2):

(f o g)(x) = 2x - 3
(f o g)(4) = 2(. . .) - 3
=   . . . - 3
=   . . .

So, (f o g)(4) = . . .

(f o g)(x) = 2x - 3
(f o g)(-2) = . . . (-2) - . . .
=   . . . - 3
=   . . .

So, (f o g)(-2) = . . .

Problem

A company has a basic salary of Rp 2,000,000.00 and an additional Rp 500,000.00 per month. If the total salary is calculated using the function f (x) = 2,000,000 + 500,000x, and taxes are calculated using the function g (x) = 0.1x, determine the net salary after tax using the function composition.

Completion:

To calculate net pay after exposure with a composition function, we need to define the composition function (g ∘ f)(x), where f(x) is the total pay and g(x) is the tax.

Step 1: Determine the total salary with f(x)
f(x) = . . . + . . . x

Step 2: Calculate tax with g(x)
g(x) = . . . x

Step 3: Create a composition function (g ∘ f)(x) to calculate tax from total salary
(g ∘ f)(x) = g(f(x))
= 0.1(. . . + 500,000x)
= 200,000 + . . . x

Step 4: Calculate net salary by subtracting taxes from total salary
Net salary = f(x) - (g ∘ f)(x)
= (. . . + 500,000x) - (200,000 + . . . x)
= . . . + . . . x

So, the composition function to calculate net salary after tax is: Net salary = . . . + . . . x.

✸Individual matters✸

Open the link listed in the QR code and work on the questions carefully!

Have a great time doing it!