

Section P.8 Combinations of Functions

Objective: In this lesson you learned how to find arithmetic combinations and compositions of functions.

Course Number

Instructor

Date

Important Vocabulary

Define each term or concept.

Arithmetic combination of functions

Composition of functions

I. Arithmetic Combinations of Functions (Pages 91–92)

Just as two real numbers can be combined with arithmetic operations, two functions can be combined by the operations of

to create new functions.

The domain of an arithmetic combination of functions f and g consists of . . .

What you should learn

How to add, subtract, multiply and divide functions

Let f and g be two functions with overlapping domains.

Complete the following arithmetic combinations of f and g for all x common to both domains:

1) Sum: $(f + g)(x) =$ _____

2) Difference: $(f - g)(x) =$ _____

3) Product: $(fg)(x) =$ _____

4) Quotient: $\left(\frac{f}{g}\right)(x) =$ _____

Example 1: Let $f(x) = 7x - 5$ and $g(x) = 3 - 2x$. Find $(f - g)(4)$.

II. Composition of Functions (Pages 93–94)

For two functions f and g , to find $(f \circ g)(x)$, . . .

What you should learn

How to find compositions of one function with another function

For the composition of the function f with g , the domain of $f \circ g$ is . . .

Example 2: Let $f(x) = 3x + 4$ and let $g(x) = 2x^2 - 1$. Find
(a) $(f \circ g)(x)$ and (b) $(g \circ f)(x)$.

III. Applications of Combinations of Functions (Page 95)

The function $f(x) = 0.06x$ represents the sales tax owed on a purchase with a price tag of x dollars and the function $g(x) = 0.75x$ represents the sale price of an item with a price tag of x dollars during a 25% off sale. Using one of the combinations of functions discussed in this section, write the function that represents the sales tax owed on an item with a price tag of x dollars during a 25% off sale.

What you should learn

How to use combinations of functions to model and solve real-life problems

Additional notes**Homework Assignment**

Page(s)

Exercises