Course Number

Instructor

Date

Section 1.4 Combinations of Functions

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

Important Vocabulary	Define each term or concept.
Arithmetic combination	
Composition	

What you should learn
How to add, subtract, multiply, and divide functions

I. Arithmetic Combinations of Functions (Pages 109–111)

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 . . .

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

To use a graphing utility to graph the sum of two functions, . . .

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

II. Compositions of Functions (Pages 111–114)

What you should learn
How to find compositions of one function with another function

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

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 115)

What you should learn
How to use combinations of functions to model and solve real-life problems

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.

Additional notes

Homework Assignment

Page(s)

Exercises