2.8 Function Operations

We can define mathematical operations on functions in much the same way that we define those operations on numbers. Let and be real functions with domains and respectively.

Then,

* , provided that

All of the above functions have a domain of .

Example: Let and

* What is the domain of ?

Another way to operate between functions is called composition. A composition of two functions, and is notated and defined as follows:

* . We say that this is the function “ composed with ” or “the composition of and ”. Notice that goes into first, then whatever comes out of goes into .
* You can similarly define . In this case, goes into first and whatever comes out, then goes into .

Example: Using the same and defined above, determine:

Let’s define a couple of new functions.

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|  |  |  |
|  |  |  |

Determine,

Let’s define and . Determine,

* The domain of
* The domain of