

Review and Preview to Chapter 2

The Domain of a Function

The **domain** of a function $f(x)$ is the set of all real values of x which make the function meaningful.

Domain Notation: $D = \{x | x \in \mathbb{R}; -4 \leq x \leq 4\}$

Ex. 1

Find the domain of each of the following functions.

(a) $f(x) = \sqrt{16 - x^2}$

(b) $j(x) = \frac{2}{3x - 7}$

$16 - x^2 \geq 0$
 $16 \geq x^2 \rightarrow 4 \geq |x|$
 so $-4 \leq x \leq 4$

this can't be negative
tough to visualize use number line

$3x - 7 = 0$
 $3x = 7$
 $x = \frac{7}{3}$

can't be 0
this is what is not allowed.

$D = \{x | x \in \mathbb{R}, x \neq \frac{7}{3}\}$

Composition of Functions

The **composition** or **composite**, of functions f and g is the function $f \circ g$ defined by

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

the entire function is inputted into the x's of f.

Ex. 2

If $f(x) = 2 - 3x$ and $g(x) = 5x^2 + x$, find the functions $f \circ g$ and $g \circ f$.

$(f \circ g)(x)$
 $f(g(x))$
 $2 - 3(5x^2 + x)$
 $2 - 15x^2 - 3x$

g(x) into x

$-15x^2 - 3x + 2$

$(g \circ f)(x)$
 $5(2 - 3x)^2 + 2 - 3x$
 $5(4 - 12x + 9x^2) + 2 - 3x$
 $20 - 60x + 45x^2 + 2 - 3x$

$45x^2 - 63x + 22$

Homework Assignment

- Exercise 1; #1
- Exercise 2; #1, 2