

Section 1.7 Transformations of Functions

Objective: In this lesson you learned how to identify and graph rigid and nonrigid transformations.

Course Number

Instructor

Date

Important Vocabulary

Define each term or concept.

Vertical shift

Horizontal shift

Nonrigid transformations

I. Shifting Graphs (Pages 74–75)

Let c be a positive real number. Complete the following representations of shifts in the graph of $y = f(x)$:

- 1) Vertical shift c units upward: _____
- 2) Vertical shift c units downward: _____
- 3) Horizontal shift c units to the right: _____
- 4) Horizontal shift c units to the left: _____

What you should learn

How to use vertical and horizontal shifts to sketch graphs of functions

Example 1: Let $f(x) = |x|$. Write the equation for the function resulting from a vertical shift of 3 units downward and a horizontal shift of 2 units to the right of the graph of $f(x)$.

A family of functions is . . .

II. Reflecting Graphs (Pages 76–77)

A **reflection** in the x -axis is a type of transformation of the graph of $y = f(x)$ represented by $h(x) = \underline{\hspace{2cm}}$. A **reflection** in the y -axis is a type of transformation of the graph of $y = f(x)$ represented by $h(x) = \underline{\hspace{2cm}}$.

What you should learn

How to use reflections to sketch graphs of functions

Example 2: Let $f(x) = |x|$. Describe the graph of $g(x) = -|x|$ in terms of f .

III. Nonrigid Transformations (Page 78)

A **rigid transformation** is . . .

What you should learn
How to use nonrigid transformations to sketch graphs of functions

Rigid transformations change only the _____ of the graph in the coordinate plane.

Name three types of rigid transformations:

- 1)
- 2)
- 3)

The four types of **nonrigid transformations** are the . . .

For $y = f(x)$ and the real number c ,

- A **vertical stretch** is represented by _____, where _____.
- A **vertical shrink** is represented by _____, where _____.
- A **horizontal shrink** is represented by _____, where _____.
- A **horizontal stretch** is represented by _____, where _____.

Homework Assignment

Page(s)

Exercises