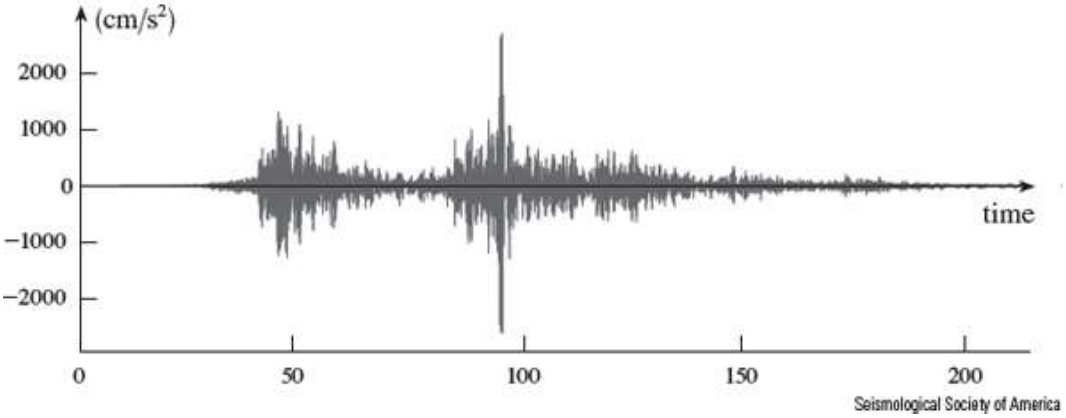
Chapter Introduction

Often a graph is the best way to represent a function because it conveys so much information at a glance. Shown is a graph of the vertical ground acceleration created by the 2011 earthquake near Tohoku, Japan. The earthquake had a magnitude of 9.0 on the Richter scale and was so powerful that it moved northern Japan 8 feet closer to North America.

Pictura Collectus/Alamy



Seismological Society of America

(Top) Pictura Collectus/Alamy, (bottom) Seismological Society of America

The fundamental objects that we deal with in calculus are functions. This chapter prepares the way for calculus by discussing the basic ideas concerning functions, their graphs, and ways of transforming and combining them. We stress that a function can be represented in different ways: by an equation, in a table, by a graph, or in words. We look at the main types

of functions that occur in calculus and describe the process of using these functions as mathematical models of real-world phenomena.