

Extension

Use after Lesson 4.2

Identify Discrete and Continuous Functions



GOAL Graph and classify discrete and continuous functions.

Key Vocabulary

- discrete function
- continuous function

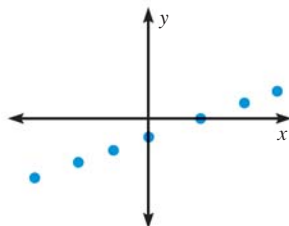
The graph of a function can consist of individual points, as in the graph in Example 3 on page 207. The graph of a function can also be a line or a part of a line with no breaks, as in the graph in Example 4 on page 217.

KEY CONCEPT

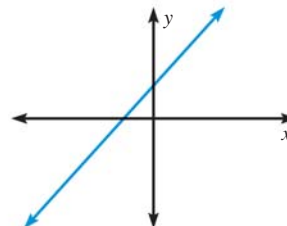
For Your Notebook

Identifying Discrete and Continuous Functions

A **discrete function** has a graph that consists of isolated points.



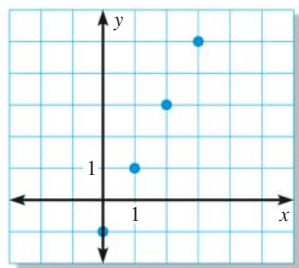
A **continuous function** has a graph that is unbroken.



EXAMPLE 1 Graph and classify a function

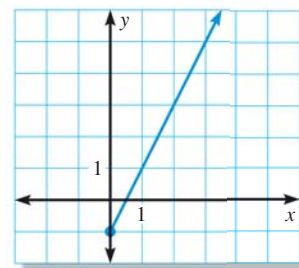
Graph the function $y = 2x - 1$ with the given domain. Classify the function as discrete or continuous.

a. Domain: $x = 0, 1, 2, 3$



The graph consists of individual points, so the function is discrete.

b. Domain: $x \geq 0$



The graph is unbroken, so the function is continuous.

GRAPHS As a general rule, you can tell that a function is continuous if you do not have to lift your pencil from the paper to draw its graph, as in part (b) of Example 1.