$$f\left(x\right)=\frac{5x}{x-2}$$

*f*(*x*) **= –***x*4 **–** 2*x*

**Exercises**

**Use the graph of each function to describe its end behavior. Support the conjecture numerically.**

As $x\rightarrow -\infty $, *f*(*x)* $\rightarrow -\infty $. As $x\rightarrow \infty $, *f*(*x*) $\rightarrow \infty $. This supports the conjecture.

As *x* increases without bound, the *y*-values increase without bound. It appears the limit is positive infinity:

$\lim\_{x\to \infty }f\left(x\right)=\infty $.

Construct a table of values to investigate function values as | *x* | increases.

**its end behavior. Support the conjecture numerically.**

As *x* decreases without bound, the *y*-values also decrease without bound. It appears the limit is negative infinity: $\lim\_{x\to -\infty }f\left(x\right)=-\infty $

*f* (*x*) **=** *x*3 **+** 2

**End Behavior** The **end behavior** of a function describes how the function behaves at either end of the graph, or what happens to the value of *f*(*x*) as *x* increases or decreases without bound*.* You can use the concept of a limit to describe end behavior.

**Study Guide and Intervention** *(continued)*

***Continuity, End Behavior, and Limits***

4 ***x***

2

***O***

**−**

**−**4

***y***

1,000,000,002

1,000,002

1002

2

–998

–999,998

–999,999,998

*f***(***x***)**

1000

100

10

0

–10

–100

–1000

***x***

**−**8

**−**4

4 ***x***

2

***O***

**−**2

**−**4

***y***

16***x***

8

***O***

**−**8

4

***y***

**Lesson 1-3**

*Glencoe Precalculus*

Chapter 1

**17**

**−**8

**−**4

**−**16

4

8

8

**2.**

**1.**

**−**8

**−**4

**−**2

4

8

**Use the graph of *f*(*x*) = *x*3 + 2 to describe**

**Example**

**1-3**

NAME DATE PERIOD







Left-End Behavior (as *x* becomes more and more negative): $\lim\_{x\to -\infty }f(x)$

Right-End Behavior (as *x* becomes more and more positive): $\lim\_{x\to \infty }f(x)$

The *f*(*x*) values may approach negative infinity, positive infinity, or a specific value.