

# 5.1

## Restriction on the Variable in a Denominator

### • Example 1

In the following algebraic fractions, what values for  $x$  must be excluded for the expression to make sense?

(a)  $\frac{x}{5}$ . Here  $x$  can have any value, so none need to be excluded.

(b)  $\frac{3}{x}$ . If  $x = 0$ , then  $\frac{3}{x}$  is undefined; 0 is the only excluded value.

(c)  $\frac{5}{x-2}$ . If  $x = 2$ , then  $\frac{5}{x-2} = \frac{5}{2-2} = \frac{5}{0}$ , which is undefined; 2 is the only excluded value.

### • • • CHECK YOURSELF 1

What values for  $x$ , if any, must be excluded?

a.  $\frac{x}{7}$

b.  $\frac{5}{x}$

c.  $\frac{7}{x-5}$

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### • • • CHECK YOURSELF ANSWER

1. (a) None; (b) 0; (c) 5.

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# 5.1 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

What values for  $x$ , if any, must be excluded in each of the following algebraic fractions for the expression to make sense?

1.  $\frac{x}{15}$

2.  $\frac{8}{x}$

3.  $\frac{17}{x}$

4.  $\frac{x}{8}$

5.  $\frac{3}{x-2}$

6.  $\frac{x-1}{5}$

7.  $\frac{-5}{x+4}$

8.  $\frac{4}{x+3}$

9.  $\frac{x-5}{2}$

10.  $\frac{x-1}{x-5}$

11.  $\frac{x}{5}$

12.  $\frac{3}{x-4}$