5.7 Substitution and Laws of Exponents: Problem Type 2

• Example 1

Use the substitution $zy = x$ to express

$\frac{x^5}{z^3y^3}$ as a power of x.

Using the laws of exponents, we obtain

$$\frac{x^5}{z^3y^3} = \frac{x^5}{(zy)^3}.$$

If we then use the substitution $zy = x$ we have

$$\frac{x^5}{(zy)^3} = \frac{x^5}{x^3}$$

$$= x^2$$

CHECK YOURSELF 1

Use the substitution $x = zy$ to express

$\frac{z^9y^9}{x^3}$ as a power of x.

CHECK YOURSELF ANSWER

1. x^6.

5.7 Exercises

Name

Section Date

ANSWERS

1.

2.

3.

4.

Using the given substitution rewrite the expression in terms of one variable and simplify.

1. $\frac{y^3z^3}{x^3}$; $x = yz$

2. $\frac{x^7y^7}{z}$, $z = xy$

3. $x^5y^3z^3$; $x = yz$

4. $\frac{x^{15}}{y^{13}z^{13}}$; $x = yz$