



Substitution and Laws of Exponents: Problem Type 2

• Example 1

Use the substitution $zy = x$ to express

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

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

$$\begin{aligned} \frac{x^5}{(zy)^3} &= \frac{x^5}{x^3} \\ &= x^2 \end{aligned}$$

● ● ● CHECK YOURSELF 1

Use the substitution $x = zy$ to express

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

● ● ● CHECK YOURSELF ANSWER

1. x^6 .

4.7 Exercises

Name _____

Section _____

Date _____

A N S W E R S

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