

4.11

Complex Fractions

• Example 1

Simplify.

$$\frac{\frac{10x^3y^2}{z^5}}{\frac{5y^2x}{z^3}}$$

We obtain, in succession,

$$\begin{aligned} \frac{10x^3y^2}{z^5} \div \frac{5y^2x}{z^3} &= \frac{10x^3y^2}{z^5} \cdot \frac{z^3}{5y^2x} \\ &= \frac{10x^3y^2z^3}{5xy^2z^5} \\ &= \frac{2x^2}{z^2} \end{aligned}$$

● ● ● CHECK YOURSELF 1

Simplify.

$$\frac{\frac{6y^4z^5}{x^2}}{\frac{10y^2z}{x}}$$

• Example 2

Simplify.

$$\frac{\frac{1}{x} + 2}{\frac{x}{2} + 3}$$

We begin by rewriting both the numerator and denominator as single fractions.

We obtain, in succession:

$$\begin{aligned} \frac{\frac{1}{x} + 2}{\frac{x}{2} + 3} &= \frac{\frac{1 + 2x}{x}}{\frac{x + 6}{2}} \\ &= \frac{1 + 2x}{x} \cdot \frac{2}{x + 6} \\ &= \frac{2 + 4x}{x^2 + 6x} \end{aligned}$$

• • • CHECK YOURSELF 2

Simplify.

$$\frac{\frac{3}{x^2} + 1}{\frac{1}{x} + 2}$$

• • • CHECK YOURSELF ANSWERS

$$1. \frac{3y^2z^4}{5x} \quad 2. \frac{x^2 + 3}{2x^2 + x}$$

4.11 Exercises

Name _____

Section _____

Date _____

A N S W E R S

Simplify

1. $\frac{\frac{a^5b^2}{c^3}}{\frac{c^2}{ab}}$

2. $\frac{\frac{x^5yz^2}{w^2}}{\frac{xy^3z^2}{w}}$

3. $\frac{\frac{s^4t^5}{u^9}}{\frac{s^5t^5}{u^8}}$

4. $\frac{\frac{xy}{3z^3}}{\frac{x^2}{4yz}}$

5. $\frac{\frac{1}{x} + \frac{1}{y}}{\frac{x}{2} + 1}$

6. $\frac{\frac{1}{2} + \frac{3}{x}}{\frac{1}{x^2}}$

7. $\frac{\frac{3}{m} + \frac{3}{n}}{\frac{n}{2} + 1}$

8. $\frac{\frac{y}{2} + \frac{1}{y}}{\frac{3}{y^2}}$

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____