

# 4.14

## Ratio of Multivariate Polynomials

### • Example 1

Simplify.

$$\frac{9x^2y^3}{36xy + 3x^2}$$

We begin by looking for common factors between all terms. Each term has a factor of  $3x$ .

$$\frac{9x^2y^3}{36xy + 3x^2} = \frac{3x \cdot 3xy^3}{3x(12y + x)}$$

Cancel the common factor of  $3x$  from the numerator and the denominator. (This assumes that  $x \neq 0$ .)

$$\frac{9x^2y^3}{36xy + 3x^2} = \frac{3xy^3}{12y + x}$$

### • • • CHECK YOURSELF 1

Simplify.

$$\frac{8a^4b^2}{2a^2b - 10a^2b^2}$$

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### • • • CHECK YOURSELF ANSWER

1.  $\frac{4a^2b}{1 - 5b}$

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# 4.14 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

Simplify each of the following expressions whenever possible.

1.  $\frac{8a^2b + 6a^2b}{2ab}$

2.  $\frac{6x^2y^3 + 9x^2y^3}{3x^2y^2}$

3.  $\frac{9r^2s^3 - 18r^3s^2}{-3rs^2}$

4.  $\frac{35x^3y^2 - 21x^2y^3 + 14x^3y}{7x^2y}$

5.  $\frac{14x^3y - 21xy^2}{7xy}$

6.  $\frac{20c^3d - 30cd + 45c^2d^2}{5cd}$

7.  $\frac{12x^4y^2z^3}{26y^2z + 8x^3y}$

8.  $\frac{15a^2b^3c^9}{5a^4b^2c^3 - 10a^2b^2c^8}$