

THINK AND DISCUSS

1. Explain how you find undefined values for a rational expression.
2. Explain why it is important to check solutions to rational equations.

Know it!
Note

3. **GET ORGANIZED** Copy and complete the graphic organizer. In each box, write a worked-out example.

	Numerical Fractions	Rational Expressions
Simplifying		
Multiplying		
Dividing		

6-2

Exercises



my.hrw.com
Homework Help

GUIDED PRACTICE

1. **Vocabulary** How can you tell if an algebraic expression is a *rational expression*?

SEE EXAMPLE 1 Simplify. Identify any x -values for which the expression is undefined.

$$2. \frac{4x^6}{2x - 6}$$

$$3. \frac{6x^2 + 13x - 5}{6x^2 - 23x + 7}$$

$$4. \frac{x + 4}{3x^2 + 11x - 4}$$

SEE EXAMPLE 2 5. $\frac{-x - 4}{x^2 - x - 20}$

$$6. \frac{6x^2 + 7x - 3}{-3x^2 + x}$$

$$7. \frac{6x^3 + 6x}{x^2 + 1}$$

SEE EXAMPLE 3 Multiply. Assume that all expressions are defined.

$$8. \frac{x - 2}{2x - 3} \cdot \frac{4x - 6}{x^2 - 4}$$

$$9. \frac{x - 2}{x - 3} \cdot \frac{2x - 6}{x + 5}$$

$$10. \frac{x^2 - 16}{x^2 - 4x + 4} \cdot \frac{x - 2}{x^2 + 6x + 8}$$

SEE EXAMPLE 4 Divide. Assume that all expressions are defined.

$$11. \frac{x^5 y^4}{3xy} \div \frac{1}{x^3 y}$$

$$12. \frac{x + 3}{x^2 - 2x + 1} \div \frac{x + 3}{x - 1}$$

$$13. \frac{x^2 - 25}{2x^2 + 5x - 12} \div \frac{x^2 - 3x - 10}{x^2 + 9x + 20}$$

$$14. \frac{x^2 + 2x + 1}{x^2 - 3x - 18} \div \frac{x^2 - 1}{x^2 - 7x + 6}$$

SEE EXAMPLE 5 Solve. Check your solution.

$$15. \frac{16x^2 - 9}{4x + 3} = -6$$

$$16. \frac{2x^2 + 7x - 15}{2x - 3} = 10$$

$$17. \frac{x^2 - 4}{x - 2} = 1$$

PRACTICE AND PROBLEM SOLVING

Simplify. Identify any x -values for which the expression is undefined.

$$18. \frac{4x - 8}{x^2 - 2x}$$

$$19. \frac{8x - 4}{2x^2 + 9x - 5}$$

$$20. \frac{x^2 - 36}{x^2 - 12x + 36}$$

$$21. \frac{3x + 18}{24 - 2x - x^2}$$

$$22. \frac{-2x^2 - 9x}{4x^2 - 81}$$

$$23. \frac{4x + 20}{-5 - x}$$