

Section 6.5 – (Multiplication and Division of Algebraic Fractions)

Rational Expressions or Algebraic Fractions behave just the same way that arithmetic fractions do. If I want to multiply two fractions I just take:

$$\frac{2}{3} \cdot \frac{5}{7} = \frac{2 \cdot 5}{3 \cdot 7} = \frac{10}{21}$$

If I want to divide two fractions, I'm sure to multiply the first fraction by the reciprocal of the second fraction.

$$\frac{3}{7} \div \frac{5}{14} = \frac{3}{7} \cdot \frac{14}{5} = \frac{42}{35} = \frac{6}{5}$$

Be sure to mention that you can simplify before multiplying; it's make the reducing unnecessary!

The objective for this section is to:

- Multiply and Divide Algebraic Fractions

Perform the indicated multiplications and divisions, expressing all answers in simplest form. To do this, you should always:

FACTOR EVERYTHING FIRST (WHEN FACTORABLE)!!!!

Remove Common Factors of One(for every one on top there must be one on the bottom)

For Division Only – Invert the 2nd fraction and multiply by removing common factors of one

1. $\frac{15R}{20} \cdot \frac{40}{45R}$

3. $\frac{24x^4y^2}{5z} \cdot \frac{125z^2}{8y^5}$

2. $\frac{5a}{9b^2} \cdot \frac{3b^5}{5a^2}$

4. $\frac{t^2}{t^2-4} \cdot \frac{t^2-5t+6}{t^2-3t}$

Section 6.5 – (Multiplication and Division of Algebraic Fractions)

5. $\frac{m^2 - n^2}{4m + 4n} \cdot \frac{m + n}{m - n}$

9. $\frac{y^2 - 9}{y^2} \div \frac{y^5 + 3y^4}{y + 2}$

6. $\frac{2t^2 - 98}{4t^2 - 4} \cdot \frac{8t + 8}{16t - 112}$

10. $\frac{6}{3x + 4} \div \frac{2x + 2}{9x^2 + 12x}$

7. $\frac{x}{4} \div \frac{x}{8}$

11. $\frac{p^2 + 5pq + 6q^2}{2p^2 + pq - q^2} \div \frac{p^2 - 9q^2}{(p + q)^2}$

8. $\frac{16a^7}{3b^5} \div \frac{8a^3}{6b}$