Lesson 5.2: Operations on Rational Expressions

Complete the *Practice* below. When you have completed all the questions for *Lesson 5.2 Practice – III* with your best work, mark your work by first comparing your answers to the solutions provided in *Appendix 2: Solutions*. Then, apply the rubric found at the beginning of the *Workbook*.

Practice – III

1. Multiply. Simplify and identify any non-permissible values.

   a. $\frac{4ab^2c}{3} \cdot \frac{9bc}{2a^3}$

   b. $\frac{g^2+9g+20}{2g} \cdot \frac{g}{g+4}$

c. $\dfrac{2x^2+11x+15}{3x^2+2x-1} \cdot \dfrac{3x^2-10x+3}{2x^2+3x-5}$

2. Divide. Simplify and identify any non-permissible values.

a. $\dfrac{6xy^2}{w} \div \dfrac{2xy}{w^2}$

b. $\dfrac{2y^2-18}{4y+4} \div \dfrac{y+3}{y+1}$

c. $\dfrac{8x^2+14x+3}{3x^2-x-2} \div \dfrac{2x^2+5x+3}{x^2-4x+3}$

3. How does the division of $\dfrac{2s+1}{s-3} \div \dfrac{2s+1}{s^2-9}$ compare to the division of $\dfrac{2s+1}{s^2-9} \div \dfrac{2s+1}{s-3}$? Explain how order matters when dividing rational expressions.

4. A shipping box has a volume of $\frac{v^2+2v-3}{v-1}$. The length of the box is $v+3$, and the width is $v-5$. Write an expression for the height of the box. Indicate any non-permissible values.

5. Simplify the rational expressions. Identify any non-permissible values.

   a. $\frac{a-5}{a-4}+\frac{3a^2-2a-1}{a^2-3a-4}\bullet\frac{a^2-4a-5}{3a^2-5a-2}$

b. $3 \div \left[\frac{-2}{s^2} - \frac{4}{s} + 6\right]$