6.2 Multiplying and Dividing Rational Expressions

Directions: Simplify the following rational expressions. State any restrictions on the variables.

1. $\dfrac{y^2-2y}{y^2+7y-18} \div \dfrac{y^2-11y+18}{y^2-81}$

$\dfrac{y}{y-2}$ $y \neq -9, 2, 9$

2. $\dfrac{y^2-25}{y^2-16} \div \dfrac{2y+10}{y^2-4y}$

$\dfrac{y(y-5)}{2(y+4)}$ $y \neq \pm 4, -5$

3. $\dfrac{14x+7}{4x-6} \cdot \dfrac{8x-12}{42x+21}$

$\dfrac{2}{3}$ $x \neq 3/2, -1/2$

4. $\dfrac{x^3}{x^2+2x+1} \div \dfrac{3x}{x^2-1}$

$\dfrac{x-1}{3(x+1)}$ $x = 1, -1, 0$

5. $\dfrac{2x+4}{3x-3} \cdot \dfrac{12x-12}{x+5}$

$\dfrac{8(x+2)}{x+5}$ $x \neq -5, 1$

6. $\dfrac{\frac{1}{3x}}{\frac{5}{6y}} \quad \dfrac{1}{3x} \div \dfrac{5}{6y} = \dfrac{1}{3x} \cdot \dfrac{6y}{5}$

$x \neq 0, y \neq 0$; $\dfrac{2y}{5x}$

7. $\dfrac{x-2}{(x+2)^2} \cdot \dfrac{x+2}{2x-4}$

$\dfrac{1}{2(x+2)}$ $x \neq -2, 2$

8. $\dfrac{5a}{5a+5} \cdot \dfrac{10a+10}{a}$

10 $a \neq 0, -1$

9. $\dfrac{x+6}{x^2-36}$

$\dfrac{1}{x-6}$ $x \neq \pm 6$