

Chapter 6

Rational Expressions Review

1. State the restrictions on the following rational expressions. Show all work.

a) $\frac{8x^2y^3}{12y^2}$

b) $\frac{x-8}{x^2-5x-24}$

c) $\frac{-5xy}{4x-3y}$

2. Simplify the following rational expressions. Show all work.

a) $\frac{m^2+5m-6}{m^2+6m}$

b) $\frac{t^2-81}{18t-2t^2}$

c) $\frac{4x^2-1}{2x^2+9x-5}$

3. Write a rational expression in expanded form with restrictions on the variable of $x \neq -3, 5$. (2 marks)

3. Write each product in simplest form.

a) $\frac{5x^2}{x-3} \times \frac{x-3}{10x}$

b) $\frac{2m-8}{m+3} \times \frac{m^2+4m+3}{m-4}$

4. Write each quotient in simplest form.

a) $\frac{t-2}{4t-5} \div \frac{4-2t}{4t-5}$

b) $\frac{2x^2+3x-2}{x^2+3x-18} \div \frac{6x^2-x-1}{x^2-4x+3}$

5. Add or subtract. Express answers in simplest form.

a) $\frac{x^2+1}{x-8} + \frac{2x+1}{x-8}$

b) $\frac{4n-8}{n^2} - \frac{n+1}{n^2}$

6. Add or subtract. Express answers in simplest form.

a) $\frac{6a-19}{a^2-3a-4} + \frac{a-5}{a-4}$

b) $\frac{2x+4}{x^2+8x+12} - \frac{x+1}{x^2-1}$

7. Simplify the following.

$$(a) \frac{y + \frac{3y}{2}}{2y - \frac{4y}{3}}$$

$$(b) \frac{\frac{4a^2 - 10}{a - 3}}{\frac{6a^2 - 15}{2a^2 - 18}}$$

7. Solve and verify each rational equation. Verify solutions.

$$a) \frac{x}{3} + \frac{3}{x} = 2$$

$$b) \frac{x - 24}{x^2 - 8x} - \frac{5 - x}{x - 8} = \frac{2x + 3}{x}$$

8. Mark drives 3 times as fast as Cathy can ride her bike. To travel 50 km, Cathy takes 1 hr more than Mark. How fast is Cathy riding her bike?