

# Chapter 11.4-11.6 Quiz Review

Name: KEY

## Section 11.4: Multiplying and Dividing Rational Expressions

Multiply or divide. Simplify the expression.

1.)  $\frac{3x^2}{2x} \cdot \frac{18x^2}{9x}$

$$\frac{3 \cdot x \cdot x}{2 \cdot x} \cdot \frac{3 \cdot 3 \cdot 2 \cdot x \cdot x}{3 \cdot 3 \cdot x}$$

$$\frac{\cancel{3} \cdot \cancel{3} \cdot \cancel{3} \cdot \cancel{2} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{3} \cdot \cancel{3} \cdot \cancel{2} \cdot \cancel{x} \cdot \cancel{x}}$$

$$\boxed{3x^2}$$

2.)  $\frac{5x^2}{7} \div \frac{10x^3}{21}$

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

$$\frac{5 \cdot x \cdot x}{7} \cdot \frac{7 \cdot 3}{5 \cdot 2 \cdot x \cdot x \cdot x}$$

$$\frac{\cancel{7} \cdot \cancel{5} \cdot 3 \cdot \cancel{x} \cdot \cancel{x}}{\cancel{7} \cdot \cancel{5} \cdot 2 \cdot \cancel{x} \cdot \cancel{x} \cdot x}$$

$$\boxed{\frac{3}{2x}}$$

3.)  $\frac{3x+12}{4x} \div \frac{x+4}{2x}$

$$\frac{3x+12}{4x} \cdot \frac{2x}{x+4}$$

$$\frac{3(x+4)}{2 \cdot 2 \cdot x} \cdot \frac{2 \cdot x}{(x+4)}$$

$$\frac{\cancel{3} \cdot \cancel{2} \cdot \cancel{x} \cdot (x+4)}{\cancel{2} \cdot \cancel{2} \cdot \cancel{x} \cdot (x+4)}$$

$$\boxed{\frac{3}{2}}$$

4.)  $\frac{x+2}{3x+6} \cdot \frac{6}{x}$

$$\frac{(x+2)}{3(x+2)} \cdot \frac{3 \cdot 2}{x}$$

$$\frac{\cancel{3} \cdot 2 \cdot (x+2)}{\cancel{3} \cdot x \cdot (x+2)}$$

$$\boxed{\frac{2}{x}}$$

5.)  $\frac{x+4}{x^2+5x+4} \cdot \frac{(3x+3)}{1}$

$$\frac{(x+4)}{(x+4)(x+1)} \cdot \frac{3(x+1)}{1}$$

$$\frac{3 \cdot (x+4) \cdot (x+1)}{(x+4) \cdot (x+1)}$$

$$\boxed{3}$$

6.)  $\frac{3x^2+2x-8}{3x} \div \frac{(3x-4)}{1}$

$3 \cdot -8 = -24$   
 $\quad \quad \quad \wedge$   
 $\quad \quad \quad 6 + -4 = 2$

$$\frac{3x^2+2x-8}{3x} \cdot \frac{1}{3x-4}$$

$$\frac{3x^2+6x-4x-8}{3x(x+2)-4(x+2)}$$

$$\frac{(x+2)(3x-4)}{3 \cdot x} \cdot \frac{1}{(3x-4)}$$

$$\frac{(x+2) \cdot (3x-4)}{3 \cdot x \cdot (3x-4)}$$

$$\boxed{\frac{x+2}{3x}}$$

**Section 11.5: Adding and Subtracting with Like Denominators**

Add or subtract. Simplify the expression.

7.)  $\frac{1-x}{2x^2-7x+5} - \frac{3-3x}{2x^2-7x+5}$   $2 \cdot 5 = 10$   
 $\frac{1-x-(3-3x)}{2x^2-7x+5}$   $\frac{2x^2-2x-5x+5}{2x^2-7x+5}$   
 $\frac{2x-2}{2x^2-7x+5}$   $\frac{2x(x-1)-5(x-1)}{(x-1)(2x-5)}$

$\frac{2(x-1)}{(x-1)(2x-5)}$   $\frac{2}{2x-5}$

8.)  $\frac{2x}{x^2+5x+4} + \frac{8}{x^2+5x+4}$

$\frac{2x+8}{x^2+5x+4}$   
 $\frac{2(x+4)}{(x+4)(x+1)}$

$\frac{2}{x+1}$

9.)  $\frac{4x}{2x+6} - \frac{16}{2x+6}$

$\frac{4x-16}{2x+6}$   
 $\frac{4(x-4)}{2(x+3)}$

$\frac{2 \cdot 2 \cdot (x-4)}{2(x+3)}$

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

10.)  $\frac{x^2-2}{x^2-25} + \frac{4x-3}{x^2-25}$

$\frac{x^2+4x-5}{x^2-25}$   
 $\frac{(x+5)(x-1)}{(x+5)(x-5)}$

$\frac{x-1}{x-5}$

**Section 11.6: Adding and Subtracting with Unlike Denominators**

Add or subtract. Simplify the expression.

11.)  $\frac{9}{2x} - \frac{2}{7x^2}$   
 $2 \cdot x \quad 7 \cdot x \cdot x$

LCD:  $7 \cdot 2 \cdot x \cdot x = 14x^2$   
 $\frac{9}{2x} = \frac{63x}{14x^2}$   $\frac{2}{7x^2} = \frac{4}{14x^2}$

$\frac{63x}{14x^2} - \frac{4}{14x^2}$   
 $\frac{63x-4}{14x^2}$

13.)  $\frac{x-1}{6x^2} + \frac{2}{3x}$   
 $3 \cdot 2 \cdot x \cdot x \quad 3 \cdot x$

LCD:  $3 \cdot 2 \cdot x \cdot x = 6x^2$   
 $\frac{2}{3x} = \frac{4x}{6x^2}$

$\frac{x-1}{6x^2} + \frac{4x}{6x^2}$   $\frac{5x-1}{6x^2}$

12.)  $\frac{x}{x-10} + \frac{4}{x+6}$

LCD:  $(x-10)(x+6)$   
 $\frac{x}{x-10} = \frac{x(x+6)}{(x-10)(x+6)}$   $\frac{4}{x+6} = \frac{4(x-10)}{(x-10)(x+6)}$

$\frac{x^2+6x}{(x-10)(x+6)} + \frac{4x-40}{(x-10)(x+6)}$

$\frac{x^2+10x-40}{(x-10)(x+6)}$

14.)  $\frac{x^2}{x-3} - \frac{2x}{x^2-x-6}$   
 $(x-3)(x+2)$

LCD:  $(x-3)(x+2)$   
 $\frac{x^2}{x-3} = \frac{x^2(x+2)}{(x-3)(x+2)}$

$\frac{x^3+2x^2}{(x-3)(x+2)} - \frac{2x}{(x-3)(x+2)}$

$\frac{x^3+2x^2-2x}{(x-3)(x+2)}$