

7.3 Multiplying & Dividing Rational Expressions DAY TWO CYU

Use when you get it right all by yourself  
*S* Use when you did it all by yourself, but made a silly mistake  
*H* Use when you could do it alone with a little help from teacher or peer  
*G* Use when you completed the problem in a group  
*X* Use when a question was attempted but wrong (get help)  
*N* Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Simplifying rational expressions	1	2	3
Multiplying rational expressions	4, 5	6, 7	8
Dividing rational expressions	10	11, 12	13
Error Analysis	9		

Simplify the following rational expressions.

1.  $\frac{2x^2}{3x^2-4x}$

$\frac{2x}{3x-4}$

D:  $(-\infty, 0) \cup (0, \infty)$

2.  $\frac{x^2-7x+12}{x^3-27}$

$\frac{x-4}{x^2+3x+9}$

D:  $(-\infty, 3) \cup (3, \infty)$

3.  $\frac{3x^3-3x^2+7x-7}{27x^4-147}$

$\frac{x-1}{3(3x^2-7)}$

D:  $(-\infty, \infty)$

Multiply. ASSUME all expressions are defined. Simplify completely.

4.  $\frac{4xy^3}{x^2y} \cdot \frac{y}{8x}$

$\frac{y^3}{2x^2}$

D:  $(-\infty, 0) \cup (0, \infty)$

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

$(x-3)(x+3)$

D:  $(-\infty, 0) \cup (0, 2) \cup (2, \infty)$

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

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

D:  $(-\infty, 0) \cup (0, 1) \cup (1, \infty)$

7.  $\frac{x^2+5x-36}{x^2-49} \cdot (x^2-11x+28)$

$\frac{(x+9)(x-4)^2}{x+7}$

D:  $(-\infty, 7) \cup (7, \infty)$

8.  $\frac{x^2-x-12}{x^2-16} \cdot (x^2+2x-8)$

$(x+3)(x-2)$

D:  $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$



9. **ERROR ANALYSIS** Describe & correct the error in simplifying the rational expression.

**X**

$$\frac{x^2 + 16x + 48}{x^2 + 8x + 16} = \frac{x^2 + 2x + 3}{x^2 + x + 1}$$

Factor first!  
 $\Rightarrow$  Cancel Factors (all or nothing!)  
 $\frac{x+12}{x+4}$

Divide. Assume all expressions are defined. Simplify completely.

10.  $\frac{32x^3y}{y^8} \div \frac{y^7}{8x^4}$

$$\frac{256x^7}{y^{14}}$$

D:  $(-\infty, 0) \cup (0, \infty)$

11.  $\frac{2x^2-12x}{x^2-7x+6} \div \frac{2x}{3x-3}$

3

D:  $(-\infty, 0) \cup (0, 1) \cup (1, 6) \cup (6, \infty)$

12.  $\frac{x^2-5x-36}{x+2} \div \frac{(x^2-18x+81)}{1}$

$$\frac{x+4}{(x+2)(x-9)}$$

D:  $(-\infty, \infty)$

13.  $\frac{x^2-3x-40}{x^2+8x-20} \div \frac{x^2+13x+40}{x^2+12x+20}$

$$\frac{(x-8)(x+2)}{(x-2)(x+8)}$$

D:  $(-\infty, -10) \cup (-10, -5) \cup (-5, \infty)$

**CYU Reflection:** How far can you go: basic, intermediate, or advanced?

**Rate your mastery level!**

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

