

HAT
More Operations with Rational Expressions

1/5/18

First QUIZ (8.1, 8.2, 8.5, 8.6) of the New
Year
Thursday, 1/11/18

Already?!?!?

Warm Up: Simplify completely.

Under what conditions is this expression undefined?

a) $\frac{x^2 + 11x + 18}{x^2 - x - 6} \cdot \frac{x^2 + 2x - 15}{3x^2 + 27x} \div \frac{x^2 - 25}{x}$

$\frac{\cancel{(x+9)}\cancel{(x+2)}}{\cancel{(x-3)}\cancel{(x+2)}} \cdot \frac{\cancel{(x+5)}\cancel{(x-3)}}{\cancel{3x}\cancel{(x+9)}} \cdot \frac{\cancel{x}}{\cancel{(x+5)}\cancel{(x-5)}} \cdot \frac{1}{3(x-5)}$

undefined when $x = 3, -2, 0, -9, -5, 5$

$\frac{1}{3x-15}$

b) $\frac{\left(\frac{x^2 + 2x - 3}{x - 3}\right)}{(4x + 12)}$

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

undefined when $x = 3, -3$

c) $\frac{5}{12} + \frac{3}{8}$

$\cdot 2 \rightarrow \frac{10}{24} + \frac{9}{24} \leftarrow \cdot 3$

$\frac{19}{24}$

d) $\frac{4}{8} + \frac{6}{12}$

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

1

Ex#1: Simplify completely.

Under what conditions is this expression undefined?

$$\frac{3}{x^2 + 2x - 8} + \frac{x}{x^2 - 16}$$

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

$$\frac{3x-12}{(x-4)(x+4)(x-2)} + \frac{x^2-2x}{(x-4)(x+4)(x-2)}$$

$$\frac{x^2 + x - 12}{(x-4)(x+4)(x-2)}$$

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

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

undefined when
 $x = 2, 4, -4$

Ex#2: Simplify completely.

Under what conditions is this expression undefined?

$$\frac{6}{2x-8} - \frac{x+1}{x^2-x-12}$$

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

$$\frac{3x+9}{(x+3)(x-4)} - \frac{x+1}{(x+3)(x-4)}$$

$$\frac{3x+9-(x+1)}{(x+3)(x-4)}$$

$$\frac{3x+9-x-1}{(x+3)(x-4)}$$

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

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

undefined when
 $x = -3, 4$

Ex#3: Simplify completely.

Under what conditions is this expression undefined?

$$\frac{x+3}{2x-10} + \frac{1}{x^2-2x-15}$$

$$\frac{x+3}{x+3} \cdot \frac{x+3}{2(x-5)} + \frac{1}{(x-5)(x+3)} \cdot \frac{2}{2}$$

$$\frac{x^2+6x+9+2}{2(x-5)(x+3)}$$

$$\frac{x^2+6x+11}{2(x-5)(x+3)}$$

undefined when $x = -3, 5$

Ex#4: Simplify completely.

$$\frac{\frac{a}{b} - 1}{1 - \frac{b}{a}} \cdot \frac{b}{b}$$

$$\frac{\frac{a}{b} - \frac{b}{b}}{1 - \frac{b}{a}}$$

$$\frac{\frac{a-b}{b}}{\frac{a-b}{a}}$$

$$\frac{a-b}{b}$$

$$\frac{a-b}{a}$$

$$\frac{\cancel{a-b}}{b} \cdot \frac{a}{\cancel{a-b}}$$

$$\frac{a}{b}$$

undefined when
 $b=0, a=0, a-b=0$
 $a=b$

END ADD/SUBTRACT

Assignment: page 541 #29, 33, 37, 47, 49, 51, 54, 55, 63