

Algebra 2 8.6 •

Solve rational equations

Solve rational inequalities *zone*

Solve mixture problems (Alg 1)

solution

excluded value

interval

Quiz 8.5-8.6 Wed.

Zone defense (?)

$$x \neq 0$$

Test point

$$0 < x < 9.3$$

Graded Practice Solve each inequality.

6A. $\frac{5}{x} + \frac{6}{5x} > \frac{2}{3}$

excluded value(s)
solution(s)
test intervals

$$15x \frac{5}{x} + \frac{6}{5x} = \frac{2}{3}$$

$$\frac{5}{15x}$$

$$\frac{5}{1} + \frac{6}{5} > \frac{2}{3}$$

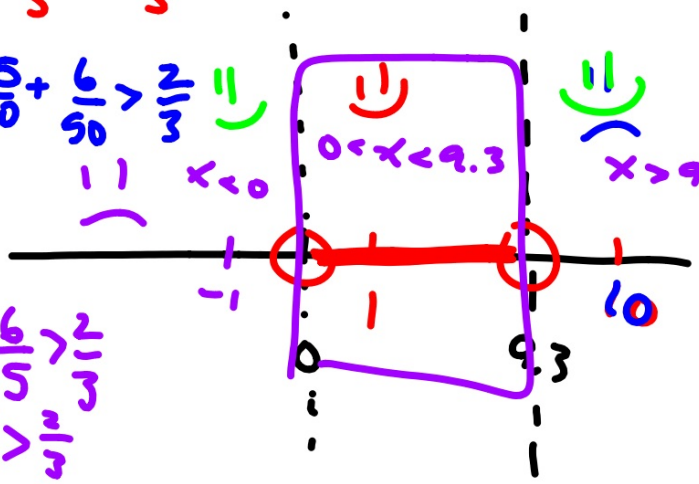
$$\frac{5}{10} + \frac{6}{50} > \frac{2}{3}$$

$$75 + 18 = 10x$$

$$93 = 10x$$

$$\frac{93}{10} = x$$

$$\frac{5}{10} + \frac{6}{50} > \frac{2}{3}$$



6B. $\frac{4}{3x} + \frac{7}{x} < \frac{5}{9}$ $x \neq 0$

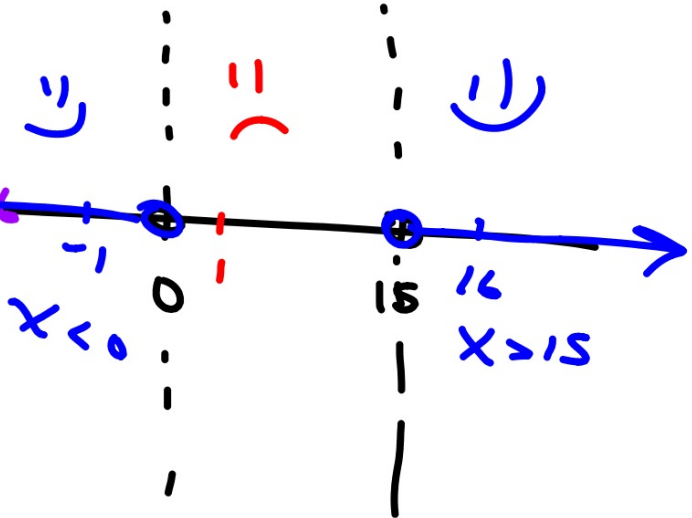
$\frac{4}{3x} + \frac{7}{x} = \frac{4}{9} + \frac{7}{9} = \frac{11}{9}$

$12 + 63 = 5x$
 $75 = 5x$
 $\frac{75}{5} = \frac{5x}{5}$
 $x = 15$

$\frac{4}{3} + \frac{7}{1} < \frac{5}{9}$

$\frac{4}{48} + \frac{7}{16} < \frac{5}{9}$

$-\frac{4}{3} + \frac{7}{1} < \frac{5}{9}$
 $-\frac{12}{9} + \frac{63}{9} < \frac{5}{9}$
 $\frac{51}{9} < \frac{5}{9}$



$x < 0$

$x > 15$

$$x \neq 2$$

Example 6 Solve a Rational Inequality

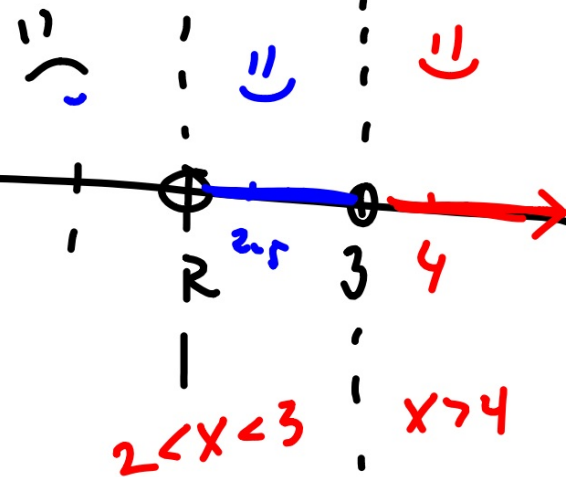
Solve $\frac{x}{3} - \frac{1}{x-2} < \frac{x+1}{4}$. $\frac{1}{3} - \frac{1}{-1} < \frac{2}{4}$

4
12x-1

$$\frac{x}{3} + \frac{-1}{x-2} = \frac{x+1}{4}$$

$$1.25 < .5$$

excluded values
solutions
test intervals



$$(4x-8)x + -12 = (3x-6)(x+1)$$

$$4x^2 - 8x + -12 = 3x^2 - 3x - 18$$

$$-3x^2 + 3x + 18 = -3x^2 + 3x + 18$$

$$x^2 - 5x + 6 = 0$$

$$(x-3)(x-2) = 0$$

$x=3$ $x=2$

$$x \neq -2 \quad x \neq 1$$

$$30. \frac{x}{x+2} + \frac{1}{x-1} < \frac{3}{2}$$

$$\frac{x}{x+2} + \frac{1}{x-1} = \frac{3}{2}$$

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

$$(2x-2)x + (2x+4) = 3(x^2+x-2)$$

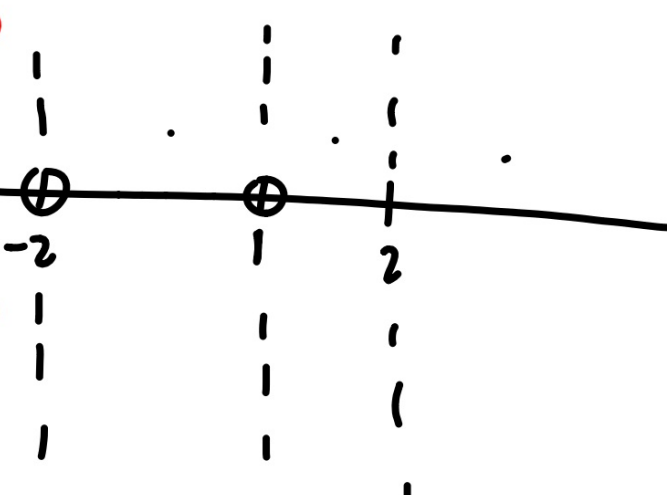
$$2x^2 - 2x + 2x + 4 = 3x^2 + 3x - 6$$

$$\begin{array}{r} -10 \\ 5 \times -2 \\ \hline 3 \end{array}$$

$$0 = x^2 + 3x - 10$$

$$(x+5)(x-2) = 0$$

$$x = -5 \quad x = 2$$



Algebra 1 % x amount

9. **8.EE.5 STRUCTURE** Sara has 10 pounds of dried fruit selling for \$6.25 per pound. She wants to know how many pounds of mixed nuts selling for \$4.50 per pound she needs to make a trail mix selling for \$5 per pound.

a. Let m = the number of pounds of mixed nuts. Complete the following table.

	Pounds	Price per Pound	Total Price
Dried Fruit	10	\$6.25	$6.25(10)$
Mixed Nuts			
Trail Mix			

What do I know for sure?

$$D=RT \quad T=D/R$$



Real-World Example 4 Distance Problem

ROWING Sandra is rowing a canoe on Stanhope Lake. Her rate in still water is 6 miles per hour. It takes Sandra 3 hours to travel 10 miles round trip. Assuming that Sandra rowed at a constant rate of speed, determine the rate of the current.

Time with the Current	Time Against the Current	Total Time

$$t=d/r$$

±

$$R \cdot T = J$$

$$T = J/R$$

 **Real-World Example 5** Work Problems 

COMMUNITY SERVICE Every year, the junior and senior classes at Hillcrest High School build a house for the community. If it takes the senior class 24 days to complete a house and 18 days if they work with the junior class, how long would it take the junior class to complete a house if they worked alone?

What is their rate?

Answer the question.

Sen.

$$R. \frac{24}{24} = \frac{1}{24}$$

$$R. \frac{18}{18} = \frac{1}{18}$$

$$R_s = \frac{1}{24}$$

$$R_{s+j} = \frac{1}{18}$$

$$R_j = ? \frac{1}{72}$$

$$R_s + R_j = R_{s+j}$$
$$\frac{1}{24} + ? = \frac{1}{18}$$

8.6 Sk.

15-24 all