

Quiz 6.3

(6 points) Simplify the complex rational expression using ~~both~~ Method I and Method II. State which method you prefer for the problem.

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

Feb 1-7:06 AM

43) $\frac{x+1}{x^2-6xy+9y^2} + \frac{x+2y}{x^2-2xy-3y^2}$
 LCD: $(x-3y)(x-3y)(x+y)$
 $\frac{(x+y)(x+y)}{(x-3y)(x-3y)(x+y)} + \frac{(x+2y)(x-3y)}{(x-3y)(x-3y)(x+y)(x-3y)}$

$\frac{x^2+3xy+y^2+x^3-xy-6y^2}{(x-3y)^2(x+y)}$
 LCD: $x(x-1)^2$

$$\begin{array}{r} -10 \\ 1 \overline{) 10} \\ \underline{-10} \\ 0 \end{array}$$

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

Nov 30-1:01 PM

6.4 Rational Equations
 LCD: $(x-3)(x-2)$
 Solve (make sure to check for extraneous answers)

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

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

$$(2x-1)(x-2) = 2(x+1)(x-3)$$

$$2x^2 - 5x + 2 = 2(x^2 - 2x - 3)$$

$$\begin{array}{r} 2x^2 - 5x + 2 = 2x^2 - 4x - 6 \\ -2x^2 + 5x + 6 \quad -2x^2 + 5x + 6 \\ \hline 8 = x \end{array}$$

Feb 1-7:08 AM

You try
 $\frac{x-4}{x^2+4} = \frac{3}{3x+2}$ $x \neq -\frac{2}{3}, 2i, -2i$

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

$$\begin{array}{r} 3x^2 - 10x - 8 = 3x^2 + 12 \\ -3x^2 + 10x + 8 \quad -3x^2 + 10x + 8 \\ \hline -10x = 20 \end{array}$$

$$x = -2$$

Feb 1-7:18 AM

Note: There is a big difference between a rational expression and equation. They are not computed the same. Watch out for this on the test!

Solve: LCD: $6x$

$$\frac{2}{x} - \frac{1}{6} = \frac{5}{2x} - \frac{1}{3}$$

$$2(6) - 1(x) = 5(3) - 1(2x)$$

$$\begin{array}{r} 12 - x = 15 - 2x \\ -12 \quad +2x \quad -12 \quad +2x \\ \hline x = 3 \end{array}$$

Feb 1-7:12 AM

Feb 1-7:16 AM

You try

$$\frac{5}{x} + \frac{1}{4} = \frac{3}{2x} - \frac{3}{2}$$

Solve LCD: $(p-3)(p-1)(p+1)$

$$\frac{3}{p^2-4p+3} + \frac{6}{p^2-2p-3} = \frac{5}{p^2-1}$$

$$(p-3)(p-1) \quad (p-3)(p+1) \quad (p+1)(p-1)$$

$$3(p+1) + 6(p-1) = 5(p-3)$$

$$3p+3 + 6p-6 = 5p-15$$

$$\begin{array}{r} 9p-3 = 5p-15 \\ -5p+3 \quad -5p+3 \\ \hline 4p = -12 \end{array}$$

$$4p = -12$$

$$p = -3$$

Feb 1-7:20 AM

Feb 1-7:21 AM

You try

$$\frac{3}{x^2 + 5x + 4} + \frac{2}{x^2 - 3x - 4} = \frac{4}{x^2 - 16}$$

Solve:

$$\frac{w+3}{w-1} + \frac{w+5}{w} = \frac{3w+1}{w-1}$$

Feb 1-7:22 AM

Feb 1-7:23 AM

You Try

$$\frac{z+1}{z+4} + \frac{z+1}{z-3} = \frac{z^2+z+16}{z^2+z-12}$$

For the function $f(x) = x + \frac{4}{x}$, Solve $f(x) = 5$. What point(s) are on the graph of f ?

$$\frac{5}{x} = \frac{x^2}{x} + \frac{4}{x}$$

$$5x = x^2 + 4$$

$$x^2 - 5x + 4 = 0$$

$$(x-4)(x-1) = 0$$

$$x = 4, 1$$

$$(4, 5) \quad (1, 5)$$

Feb 1-7:31 AM

Feb 1-7:39 AM

You try

For the function $f(x) = 2x - \frac{3}{x}$, Solve $f(x) = 1$. What point(s) are on the graph of f ?

The concentration C of a drug in a patient's bloodstream in milligrams per liter t hours after ingestion is modeled by

$$C(t) = \frac{40}{t^2 + 9}$$

When will the concentration of the drug be 4 milligrams per liter?

$$(t^2 + 9)4 = \frac{40}{t^2 + 9} \quad t^2 + 9$$

$$4t^2 + 36 = 40$$

$$4t^2 - 4 = 0$$

$$4(t^2 - 1) = 0$$

$$4(t-1)(t+1) = 0$$

$$t = 1, \cancel{t = -1}$$

After 1 hour, the concentration is 4mg

Feb 1-10:00 AM

Feb 1-10:02 AM

Nov 30-1:34 PM