

Class # 36 - Tues Nov 23

- our next class will be next Tues. (Nov 30)

* WebWork :

- 4 sets closing tonight
- work on "Complex Fractions" sets.

today :

- solving "rational (or fractional) equations"
- integer exponents.

Complex Fractions - Method 2 : Problem 3

(2)

Simplify: $\frac{\frac{3}{y^2} + \frac{1}{y} \cdot \frac{y}{y}}{\frac{9}{y^2} - \frac{1}{1} \cdot \frac{y^2}{y^2}}$ LCD: y^2

$\frac{\frac{3}{y^2} + \frac{1}{y} \cdot \frac{y}{y}}{\frac{9}{y^2} - \frac{1}{1} \cdot \frac{y^2}{y^2}}$ LCD: y^2

$$= \frac{\frac{3}{y^2} + \frac{y}{y^2}}{\frac{9}{y^2} - \frac{y^2}{y^2}} = \frac{\left(\frac{3+y}{y^2}\right)}{\left(\frac{9-y^2}{y^2}\right)} = \frac{(3+y)}{y^2} \cdot \frac{y^2}{(9-y^2)}$$
$$= \frac{\cancel{(3+y)}}{(3-y)(3+y)} = \boxed{\frac{1}{3-y}}$$

factor as "diff of squares":

$$9 - y^2 = (3-y)(3+y) //$$

Next WebWork (after "Complex Fractions")

3

"Fractional Equations"

#1

$$\frac{x+4}{10} - \frac{x-3}{12} = \frac{1}{3}$$

LCD: 60

$$\frac{(x+4) \cdot \boxed{6}}{\boxed{60}} - \frac{(x-3) \cdot \boxed{5}}{\boxed{60}} = \frac{1}{3}$$

$$\frac{(6x+24)}{60} - \frac{(5x-15)}{60} = \frac{1}{3}$$

$$\underline{60} \cdot \frac{(6x+24) - (5x-15)}{\underline{60}} = \frac{1}{3} \cdot \underline{60} \Rightarrow$$

$$x + 39 = 20$$
$$\boxed{x = -19}$$

relevant examples
to study:

OpenStax

§ 2.1,

example 2.9

~~§ 2.1~~
~~example 2.9~~

Fractional Equations - #2

$$\frac{5}{4p} - \frac{4}{3} + \frac{4}{1} = 0$$

LCM of 4p, 3 : 12p

$$\boxed{12p} \left[\frac{5}{4p} - \frac{4}{3} + 4 \right] = 0 \quad \boxed{12p}$$

$$\frac{5(12p)}{4p} - \frac{4(12p)}{3} + 48p = 0$$

$$15 - 16p + 48p = 0$$

$$\boxed{32p = -15}$$
$$\boxed{p = -\frac{15}{32}}$$

OpenStax § 7.4

Example 7.33

$$\frac{1}{x} + \frac{1}{3} = \frac{5}{6}$$

slightly diff. strategy:
find LCD of all the terms

i.e., LCM of x, 3, 6 : "6x"

$$6x \left(\frac{1}{x} + \frac{1}{3} \right) = \left(\frac{5}{6} \right) 6x$$

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

$$6 + 2x = 5x$$

$$6 = 3x$$
$$\boxed{x = 2}$$