

## SM3 HW #3-4 (Add/subtract rational expressions)

Period \_\_\_\_\_

**Simplify each expression.**

1)  $\frac{x-6y}{8x^4y} + \frac{x+2y}{8x^4y}$

2)  $\frac{4u+2v}{20u^3} + \frac{u-3v}{20u^3}$

3)  $\frac{u-5v}{6u^2} - \frac{5u+2v}{6u^2}$

4)  $\frac{x+3y}{6} + \frac{5x}{3x}$

5)  $\frac{3}{2p-5} - \frac{5}{2p}$

6)  $\frac{a-4}{a-2} - \frac{2}{a+2}$

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

8)  $\frac{3}{5n+6} + \frac{3}{n+3}$

$$9) \frac{6x}{3x} - \frac{6x}{3x^2 + 18x}$$

$$10) \frac{2a}{a-3} - \frac{2}{a+5}$$

$$11) \frac{k+6}{15k+6} + \frac{5k}{3k}$$

$$12) \frac{x-1}{10x-30} - 3x$$

13) What property was improperly applied and where was the error made for the following:

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

14) What property was improperly applied and where was the error made for the following:

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

### Simplify the complex fractions

$$15) \frac{\frac{4}{25}}{\frac{25}{x-4}}$$

$$16) \frac{\frac{m}{m-3}}{\frac{5}{m-3}}$$

(From Lesson 3-3) Simplify each and state the excluded values.

$$17) \frac{3n^3 + 33n^2 + 90n}{3n^2 - 12n - 180}$$

$$18) \frac{m^2 + 12m + 27}{2m^2 + 4m - 126}$$

19) 
$$\frac{p^2 + 9p - 10}{p^2 + 12p + 20}$$

20) 
$$\frac{2x^3 - 22x^2 + 36x}{2x^2 + 12x - 32}$$

**(From Lesson 3-2) Sum and Difference of Cubes:**

**a) Rewrite in factored form.**

**b) Find the Zeroes.**

21) 
$$y = x^3 + 216$$

22) Divide the following polynomial by  $(x^2 - 2)$  using either long division or synthetic division. Show all your work. Write your answer as "y = quotient + remainder/divisor"

$$y = \frac{2x - 4}{x - 1}$$