Name _____ Block 2 Day/Date 21/Feb 7

9-5 Notes

Adding and Subtracting Rational Expressions

Find the least common multiple of each pair of polynomials.

To Find the LCM: Factor each expression. Numbers must be broken down into prime factors. Circle what they have in common, and write those factor(s) down once, then write the remaining factors from each expression down as well.

1. $3x(x+2)$ and $6x(2x-3)$

$3 \cdot x(x+2)$ and $3 \cdot 2 \cdot x(2x-3)$

$2 \cdot 3 \cdot x(x+2)(2x-3)$

$6x(x+2)(2x-3)$

2. $2x^2 - 8x + 8$ and $3x^2 + 27x - 30$

$2(x-2)(x-2)$ $3(x-1)(x+10)$

$2 \cdot 3$

$6(x-2)(x-2)(x-1)(x+10)$

or $(2x^2-8x+8)(3x^2+27x-30)$

3. $4x^2 + 12x + 9$ and $4x^2 - 9$

$(2x+3)(2x+3)$ and $(2x-3)(2x+3)$

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

OR $(2x+3)^2(2x-3)$

4. $2x^2 - 18$ and $5x^3 + 30x^2 + 45x$

Simplify.

5. $\frac{x^2}{5} + \frac{x^2}{5}$

$\frac{2x^2}{5}$

6. $\frac{6x^2}{3x-2} + \frac{5x-6}{3x-2}$

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

7. $\frac{2y+1}{3y} + \frac{5y+4}{3y}$

$\frac{7y+5}{3y}$

8. $\frac{1f(+1)}{fgh} + \frac{1f(-1)}{fgh}$

$\frac{2f}{fgh} = \frac{2}{gh}$

9. $\frac{6y-4}{y^2-5} + \frac{3y+1}{y^2-5}$

$\frac{9y-3}{y^2-5}$

10. $\frac{12}{xy^3} - \frac{9}{xy^3}$ $= \frac{3}{xy^3}$

$4-1 = 4+^{-}1$

11. $\frac{x}{6} + \frac{-2x}{9}$ (·3, ·2)

$\frac{3x}{18} + \frac{-4x}{18}$

$= \frac{-1x}{18}$

12. $\frac{x^2-2}{12} + \frac{x}{6}$ (·2)

$\frac{x^2-2}{12} + \frac{2x}{12}$

$\frac{x^2+2x-2}{12}$

13. $\frac{3}{8x^3y^3} + \frac{-1}{4xy}$ (·$2x^2y^2$)

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

$= \frac{3-2x^2y^2}{8x^3y^3}$

14. $\frac{2y}{2y \cdot 5x^2y} + \frac{5 \cdot x}{10xy^2 \cdot x}$ (2y·6, x)

$\frac{12y}{10x^2y^2} + \frac{5x}{10x^2y^2}$

$\frac{5x+12y}{10x^2y^2}$

15. $\frac{(n-4)2}{(n-4)(n+4)} + \frac{-n^2}{n^2-16}$

$(n-4)(n+4)$

$\frac{2n-8}{(n-4)(n+4)} + \frac{-n^2}{(n-4)(n+4)}$

$\frac{-n^2+2n-8}{(n-4)(n+4)}$

16. $\frac{xy-y}{(x+2)(x-2)} + \frac{-y}{(x+2)}$ ($\cdot(x-2)$)

$(x+2)(x-2)$

$x^2y - xy + 2xy - 2y - xy + 2y$

$(x+2)(x-2)$

$= \frac{x^2y}{(x+2)(x-2)}$

17. $\frac{x+2}{x^2+4x+4} + \frac{2}{x+2}$

18. $\frac{4}{x^2-25} + \frac{6}{x^2+6x+5}$ ($\cdot(x+1)$, $\cdot(x-5)$)

$(x+1)(x-5)(x+5)$ $(x+1)(x+5)(x-5)$

$\frac{4x+4+6x-30}{(x+1)(x-5)(x+5)}$

$\frac{10x-26}{(x+1)(x-5)(x+5)}$

19. $\frac{1}{6x^2-11x+3} + \frac{1}{8x^2-18}$

20. $\frac{4}{x^2-3x}+\frac{6}{3x-9}$

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

22. $3+\frac{-1}{x^2+5}$

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

$\frac{3x^2+15+-1}{x^2+5}=\frac{3x^2+14}{x^2+5}$

23. $5+\frac{1}{x^2-5x+6}$

$\frac{5}{1}\cdot\frac{(x^2-5x+6)}{(x^2-5x+6)}+\frac{1}{(x^2-5x+6)}$

24. $\frac{2a}{a+2}+\frac{3a}{a-2}$

31. $\frac{x-y}{x+y}+\frac{y}{x}$

***Complex Fractions*: (Multiply each term in the top and bottom by the LCD), Then Simplify**

32. $\frac{\frac{2}{x}}{\frac{3}{y}}$

$\left(\frac{2}{x}\right)\div\left(\frac{3}{y}\right)$

$\frac{2}{x}\cdot\frac{y}{3}=\frac{2y}{3x}$

33. $\frac{x\left(1+\frac{2}{x}\right)}{x\left(4-\frac{6}{x}\right)}=\frac{1x+2}{4x-6}$

34. $\dfrac{\dfrac{1}{x-2}}{2+\dfrac{1}{x}}$

36. $\dfrac{1+\dfrac{2}{3}}{\dfrac{4}{9}}$

38. $\dfrac{\dfrac{3}{x+1}}{\dfrac{5}{x-1}} = \dfrac{3(x-1)}{5(x+1)}$ OR $\dfrac{3x-3}{5x+5}$

$\dfrac{3}{x+1} \cdot \dfrac{x-1}{5}$

39. $\dfrac{\dfrac{2}{x}+6}{\dfrac{1}{y}} \cdot \dfrac{xy}{xy} = \dfrac{2y+6xy}{1x}$

41. The total resistance for a parallel circuit is given by

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}.$$

a. If $R = 1$ ohm, $R_2 = 6$ ohms, and $R_3 = 8$ ohms, find R_1.

b. If $R_1 = 3$ ohms, $R_2 = 4$ ohms, and $R_3 = 6$ ohms, find R.