Adding and Subtracting Rationals Notes

Find the LCM

1) x^2y^3

2) $a^2b^3c^4$

3) $(x+1)(x+3)$

4) $(g-1)(g+4)$

5) $2r(r+1)$

6) $6(2w+1)(2w-1)$

7) $(x+4)(x-2)$

8) $(x+2)(x+4)(x-3)$

9) $2(d-3)(d+3)^2$

1 $\frac{5 \cdot 4}{6ab \cdot 4} - \frac{7 \cdot 3b}{8a \cdot 3b}$

$\frac{20}{24ab} - \frac{21b}{24ab} = \frac{20 - 21b}{24ab}$

2 $\frac{5}{12x^4y \cdot 5y^2} - \frac{1}{5x^2y^3} \cdot 12x^2$

$= \frac{25y^2}{60x^4y^3} - \frac{12x^2}{60x^4y^3} = \frac{25y^2 - 12x^2}{60x^4y^3}$

3. $\frac{1}{6c^2d \cdot 2d^2} + \frac{3}{4cd^3} \cdot 3c$

$\frac{2d^2}{12c^2d^3} + \frac{9c}{12c^2d^3} = \frac{2d^2 + 9c}{12c^2d^3}$

4. $\frac{4m}{3mn} + 2$

$\frac{4m}{3mn} + \frac{6mn}{3mn} = \frac{4m + 6mn}{3mn} = \frac{2m(2 + 3n)}{3mn}$

$= \frac{2(2+3n)}{3n}$

5 $2x - 5 - \frac{x-8}{x+4}$

$\frac{2x^2 + 3x - 20}{x+4} - \frac{x-8}{x+4} =$

$(2x-5)(x+4)$

$2x^2 + 8x - 5x - 20$

$2x^2 + 3x - 20$

$\frac{2x^2 + 2x - 12}{x+4}$

$\frac{2(x+3)(x-2)}{x+4}$

6. $\frac{4}{a-3} + \frac{9}{a-5}$

$\frac{4(a-5) + 9(a-3)}{(a-3)(a-5)}$ $\frac{4a-20+9a-27}{a^2-8a+15} = \frac{13a-47}{a^2-8a+15}$

$(a-3)(a-$

7. $\frac{16}{x^2-16} + \frac{2}{x+4}$

$\frac{16}{x^2-16} + \frac{2(x-4)}{x^2-16} =$ $\frac{16+2x-8}{x^2-16}$ $\frac{8+2x}{x^2-16} = \frac{2(x+4)}{(x+4)(x-4)}$

$\frac{2}{x-4}$

8. $\frac{2-5m}{m-9} \cdot -1 + \frac{4m-5}{9-m}$

$\frac{-2+5m}{9-m} + \frac{4m-5}{9-m} = \frac{-7+9m}{9-m} = \frac{7-9m}{m-9}$

9. $\frac{y-5}{y^2-3y-10}$ $\frac{y}{y^2+y-2}$

$(y-5)(y+2)$ $(y+2)(y-1)$

$\frac{(y-5)(y-1)}{(y-5)(y-1)(y+2)} + \frac{y(y-5)}{(y+2)(y-1)(y-5)}$

$\frac{y^2-6y+5 + y^2-5y}{} = \frac{2y^2-11y+5}{(2y-1)(y-5)}$

$= \frac{2y-1}{(y+2)(y-1)}$ $(y+2)(y-1)(y-5)$

10 $\frac{5}{2x-12} - \frac{20}{x^2-4x-12}$

$\frac{5}{2(x-6)} - \frac{20}{(x-6)(x+2)}$

$\frac{5(x+2)}{2(x-6)(x+2)} - \frac{40}{2(x-6)(x+2)} = \frac{5x+10-40}{2(x-6)(x+2)} = \frac{5x-30}{2(x-6)(x+2)}$

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

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

11 $\frac{2p-3}{p^2-5p+6} - \frac{5}{p^2-9}$

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

$\frac{(2p-3)(p+3)}{(p-3)(p-2)(p+3)} - \frac{5(p-2)}{(p+3)(p-2)(p-3)} = \frac{2p^2+3p-9-(5p-10)}{(p+3)(p-2)(p-3)}$

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

12 $\frac{1}{5n} - \frac{3}{4} + \frac{7}{10n}$

$\frac{4a}{20n} - \frac{15n}{20n} + \frac{14}{20n}$

$\frac{4-15n+14}{20n} = \frac{-15n+18}{20n}$

$= \frac{3(-5n+6)}{20n}$

13 $\frac{2a}{a-3} - \frac{2a}{a+3} + \frac{36}{a^2-9}$

$\frac{2a(a+3)}{(a-3)(a+3)} - \frac{2a(a-3)}{(a+3)(a-3)} + \frac{36}{(a+3)(a-3)} = \frac{2a^2+6a-(2a^2-6a)+36}{(a+3)(a-3)}$

$\frac{12a+36}{(a+3)(a-3)}$

$\frac{12(a+3)}{(a+3)(a-3)}$

$\frac{12}{a-3}$