

HW - Adding & Subtracting Rationals

Simplify each expression.

$$1) \frac{x-3y}{6x^3} + \frac{3x+y}{6x^3} = \frac{4x-2y}{6x^3}$$

*reduce!

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

$$2) \frac{x+4y}{36x} + \frac{6x}{36x} = \frac{7x+4y}{36x}$$

$$\frac{7x+4y}{36x}$$

$$3) \frac{3}{4} + \frac{4b}{5a} \quad \underline{\text{CD: } 20a}$$

$$\frac{15a}{20a} + \frac{16b}{20a}$$

$$\frac{15a+16b}{20a}$$

$$4) \frac{2v}{3u} - \frac{5v}{5} \quad \underline{\text{CD: } 15u}$$

$$\frac{10v}{15u} - \frac{15uv}{15u}$$

$$\frac{10v-15uv}{15u} \quad \text{*reduce!}$$

$$\frac{2v-3uv}{3u}$$

$$5) \frac{5x}{6xy} + \frac{5}{6x^3} \quad \underline{\text{CD: } 6x^3y}$$

$$\frac{5x^3}{6x^3y} + \frac{5y}{6x^3y}$$

$$\frac{5x^3+5y}{6x^3y}$$

$$6) \frac{4y}{5x^3} + \frac{6x}{5y} \quad \underline{\text{CD: } 5x^3y}$$

$$\frac{4y^2}{5x^3y} + \frac{6x^4}{5x^3y}$$

$$\frac{4y^2+6x^4}{5x^3y}$$

$$7) \frac{3}{5xy} + \frac{4}{4x^2} \quad \underline{\text{CD: } 20x^2y}$$

$$\frac{12x}{20x^2y} + \frac{20y}{20x^2y}$$

$$\frac{12x+20y}{20x^2y} \quad \text{*reduce!}$$

$$\frac{3x+5y}{5x^2y}$$

$$8) \frac{6}{5y} - \frac{2}{6x^2} \quad \underline{\text{CD: } 30x^2y}$$

$$\frac{36x^2}{30x^2y} - \frac{10y}{30x^2y}$$

$$\frac{36x^2-10y}{30x^2y} \quad \text{*reduce!}$$

$$\frac{18x^2-5y}{15x^2y}$$

$$9) \frac{3y}{4xy^2} + \frac{5y}{4y^2} \quad \underline{\text{CD: } 4xy^2}$$

$$6b) \frac{3y}{4xy^2} + \frac{5xy}{4xy^2}$$

$$\frac{3y+5xy}{4xy^2}$$

$$\frac{3+5x}{4xy}$$

$$10) \frac{5x}{2y^3} - \frac{5x+3y}{6xy^2} \quad \underline{\text{CD: } 6xy^3}$$

$$\frac{15x^2}{6xy^3} - \frac{5xy+3y^2}{6xy^3}$$

$$\frac{15x^2-5xy-3y^2}{6xy^3}$$

11) $\frac{5n}{2n-3} + \frac{3}{5}$ CD: $5(2n-3)$
 $\frac{25n}{5(2n-3)} + \frac{3(2n-3)}{5(2n-3)}$
 $\frac{25n+6n-9}{5(2n-3)}$
 $\frac{31n-9}{5(2n-3)}$

12) $\frac{4n}{n-6} - \frac{2}{n-1}$ CD: $(n-6)(n-1)$
 $\frac{4n(n-1)}{(n-6)(n-1)} - \frac{2(n-6)}{(n-6)(n-1)}$
 $\frac{4n^2-4n-2n+12}{(n-6)(n-1)}$
 $\frac{4n^2-6n+12}{(n-6)(n-1)}$

13) $\frac{5}{p-3} + \frac{2}{p-6}$ CD: $(p-3)(p-6)$
 $\frac{5(p-6)}{(p-3)(p-6)} + \frac{2(p-3)}{(p-3)(p-6)}$
 $\frac{5p-30+2p-6}{(p-3)(p-6)}$
 $\frac{7p-36}{(p-3)(p-6)}$

14) $\frac{b-1}{2b^2-50} - \frac{2}{3}$ CD: $6(b-5)(b+5)$
 $\frac{b-1}{2(b^2-25)} - \frac{2}{3}$
 $\frac{3(b-1)}{6(b-5)(b+5)} - \frac{2(3)(b-5)(b+5)}{6(b-5)(b+5)}$

15) $\frac{4}{x^2+x-12} + \frac{2}{1}$
 $\frac{4}{(x+4)(x-3)} + \frac{2(x+4)(x+3)}{(x+4)(x+3)}$
 $\frac{4+2x^2+2x-24}{(x+4)(x+3)}$
 $\frac{2x^2+2x-20}{(x+4)(x+3)}$

16) $\frac{4}{2} + \frac{4n+1}{2n^2-24n+72}$ CD: $2(n-6)(n-6)$
 $\frac{4(n-6)(n-6)}{2(n-6)(n-6)} + \frac{4n+1}{2(n-6)(n-6)}$
 $\frac{4n^2-48n+144+4n+1}{2(n-6)(n-6)}$
 $\frac{4n^2-44n+145}{2(n-6)(n-6)}$

17) $\frac{6}{15r^2-30r} - \frac{3r}{r-4}$ CD: $15r(r-2)(r-4)$
 $\frac{6(r-4)}{15r(r-2)(r-4)} - \frac{3r(15r)(r-2)}{15r(r-2)(r-4)}$
 $\frac{6r-24-45r^3+90r^2}{15r(r-2)(r-4)}$ *reduce!*
 $\frac{2r-8-15r^3+30r^2}{5r(r-2)(r-4)}$

18) $\frac{5}{3} + \frac{2}{x^2-5x-6}$ CD: $3(x-6)(x+1)$
 $\frac{5(x-6)(x+1)}{3(x-6)(x+1)} + \frac{2(3)}{3(x-6)(x+1)}$
 $\frac{5x^2-25x-30+6}{3(x-6)(x+1)}$
 $\frac{5x^2-25x-24}{3(x-6)(x+1)}$

19) $\frac{3b}{3} - \frac{5b}{2b^3+4b^2-6b}$ CD: $6b(b+3)(b-1)$
 $\frac{3b(2)(b+3)(b-1)}{6b(b+3)(b-1)} - \frac{5b(3)}{6b(b+3)(b-1)}$

20) $\frac{3x}{2x+6} + \frac{8x}{7x-6}$ CD: $2(x+3)(7x-6)$
 $\frac{3x(7x-6)}{2(x+3)(7x-6)} + \frac{8x(2)(x+3)}{2(x+3)(7x-6)}$

$\frac{6b^4+12b^3-18b^2-15b}{6b(b+3)(b-1)}$ *reduce!*
 $\frac{2b^3+4b^2-6b-5}{2(b+3)(b-1)}$

$\frac{21x^2-18x+16x^2+48x}{2(x+3)(7x-6)}$
 $\frac{37x^2+30x}{2(x+3)(7x-6)}$