Name_____

Adding/Subtracting Rational Expressions

Date_____ Period____

Simplify each expression.

1) $\dfrac{u - v}{8v} + \dfrac{6u - 3v}{8v}$

2) $\dfrac{m - 3n}{6m^3n} - \dfrac{m + 3n}{6m^3n}$

3) $\dfrac{5}{a^2 + 3a + 2} + \dfrac{5a + 1}{a^2 + 3a + 2}$

4) $\dfrac{5}{10n^2 + 16n + 6} + \dfrac{n - 6}{10n^2 + 16n + 6}$

5) $\dfrac{r + 6}{3r - 6} + \dfrac{r + 1}{3r - 6}$

6) $\dfrac{x + 2}{2x^2 + 13x + 20} - \dfrac{x + 3}{2x^2 + 13x + 20}$

7) $\dfrac{6}{x - 1} - \dfrac{5x}{4}$

8) $6 - \dfrac{x + 5}{(7x - 5)(x + 4)}$

9) $\dfrac{3}{x + 7} + \dfrac{4}{x - 8}$

10) $\dfrac{3}{4v^2 + 4v} - \dfrac{7}{2}$

11) $\dfrac{7}{3} - \dfrac{8}{12x - 8}$

12) $\dfrac{5}{n + 5} + \dfrac{4n}{2n + 6}$

13) $\dfrac{2x}{5x + 4} + \dfrac{6x}{2x + 3}$

14) $\dfrac{2}{3x^2 + 12x} + \dfrac{8}{2x}$

15) $\dfrac{7n}{n+1} + \dfrac{8}{n-7}$

16) $\dfrac{2}{n+8} + \dfrac{4}{n+1}$

17) $\dfrac{3}{8} - \dfrac{3}{3x+4}$

18) $\dfrac{3}{b-8} + \dfrac{7}{b+3}$

19) $\dfrac{3}{x+6} + \dfrac{7}{x-2}$

20) $\dfrac{4}{x+1} - \dfrac{2}{x+2}$

21) $\dfrac{5n+5}{5n^2+35n-40} + \dfrac{7n}{3n}$

22) $\dfrac{3}{n-5} + \dfrac{6}{3n-8}$

23) $\dfrac{\dfrac{25}{4}}{\dfrac{1}{5} - \dfrac{4}{25}}$

24) $\dfrac{8}{\dfrac{4}{9} + \dfrac{16}{9}}$

25) $\dfrac{\dfrac{a}{25} - \dfrac{a}{5}}{a}$

26) $\dfrac{\dfrac{5}{4}}{\dfrac{5}{m} - \dfrac{4}{m}}$

Critical thinking questions:

27) Simplify: $\dfrac{a}{b} + \dfrac{c}{d}$

28) Split into a sum of two rational expressions with unlike denominators:

$$\dfrac{2x+3}{x^2+3x+2}$$

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Simplify each expression.

1) $\dfrac{u - v}{8v} + \dfrac{6u - 3v}{8v}$

$\dfrac{7u - 4v}{8v}$

2) $\dfrac{m - 3n}{6m^3 n} - \dfrac{m + 3n}{6m^3 n}$

$-\dfrac{1}{m^3}$

3) $\dfrac{5}{a^2 + 3a + 2} + \dfrac{5a + 1}{a^2 + 3a + 2}$

$\dfrac{6 + 5a}{a^2 + 3a + 2}$

4) $\dfrac{5}{10n^2 + 16n + 6} + \dfrac{n - 6}{10n^2 + 16n + 6}$

$\dfrac{-1 + n}{10n^2 + 16n + 6}$

5) $\dfrac{r + 6}{3r - 6} + \dfrac{r + 1}{3r - 6}$

$\dfrac{2r + 7}{3r - 6}$

6) $\dfrac{x + 2}{2x^2 + 13x + 20} - \dfrac{x + 3}{2x^2 + 13x + 20}$

$-\dfrac{1}{2x^2 + 13x + 20}$

7) $\dfrac{6}{x - 1} - \dfrac{5x}{4}$

$\dfrac{24 - 5x^2 + 5x}{4(x - 1)}$

8) $6 - \dfrac{x + 5}{(7x - 5)(x + 4)}$

$\dfrac{42x^2 + 137x - 125}{(7x - 5)(x + 4)}$

9) $\dfrac{3}{x + 7} + \dfrac{4}{x - 8}$

$\dfrac{7x + 4}{(x + 7)(x - 8)}$

10) $\dfrac{3}{4v^2 + 4v} - \dfrac{7}{2}$

$\dfrac{3 - 14v^2 - 14v}{4v(v + 1)}$

11) $\dfrac{7}{3} - \dfrac{8}{12x - 8}$

$\dfrac{21x - 20}{3(3x - 2)}$

12) $\dfrac{5}{n + 5} + \dfrac{4n}{2n + 6}$

$\dfrac{15n + 15 + 2n^2}{(n + 3)(n + 5)}$

13) $\dfrac{2x}{5x + 4} + \dfrac{6x}{2x + 3}$

$\dfrac{34x^2 + 30x}{(5x + 4)(2x + 3)}$

14) $\dfrac{2}{3x^2 + 12x} + \dfrac{8}{2x}$

$\dfrac{50 + 12x}{3x(x + 4)}$

15) $\dfrac{7n}{n+1} + \dfrac{8}{n-7}$

$\dfrac{7n^2 - 41n + 8}{(n+1)(n-7)}$

16) $\dfrac{2}{n+8} + \dfrac{4}{n+1}$

$\dfrac{6n + 34}{(n+1)(n+8)}$

17) $\dfrac{3}{8} - \dfrac{3}{3x+4}$

$\dfrac{9x - 12}{8(3x+4)}$

18) $\dfrac{3}{b-8} + \dfrac{7}{b+3}$

$\dfrac{10b - 47}{(b+3)(b-8)}$

19) $\dfrac{3}{x+6} + \dfrac{7}{x-2}$

$\dfrac{10x + 36}{(x+6)(x-2)}$

20) $\dfrac{4}{x+1} - \dfrac{2}{x+2}$

$\dfrac{2x + 6}{(x+1)(x+2)}$

21) $\dfrac{5n+5}{5n^2 + 35n - 40} + \dfrac{7n}{3n}$

$\dfrac{52n - 53 + 7n^2}{3(n+8)(n-1)}$

22) $\dfrac{3}{n-5} + \dfrac{6}{3n-8}$

$\dfrac{15n - 54}{(3n-8)(n-5)}$

23) $\dfrac{\dfrac{25}{4}}{\dfrac{1}{5} - \dfrac{4}{25}}$

$\dfrac{625}{4}$

24) $\dfrac{8}{\dfrac{4}{9} + \dfrac{16}{9}}$

$\dfrac{18}{5}$

25) $\dfrac{\dfrac{a}{25} - \dfrac{a}{5}}{a}$

$-\dfrac{4}{25}$

26) $\dfrac{\dfrac{5}{4}}{\dfrac{5}{m} - \dfrac{4}{m}}$

$\dfrac{5m}{4}$

Critical thinking questions:

27) Simplify: $\dfrac{a}{b} + \dfrac{c}{d}$

$\dfrac{ad + bc}{bd}$

28) Split into a sum of two rational expressions with unlike denominators:

$\dfrac{2x + 3}{x^2 + 3x + 2}$

Many solutions. Ex: $\dfrac{1}{x+1} + \dfrac{1}{x+2}$