

Adding/Subtracting Rational Expressions

Simplify each expression.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Critical thinking questions:

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

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

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

Adding/Subtracting Rational Expressions

Simplify each expression.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{625}{4}$$

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

$$\frac{18}{5}$$

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

$$-\frac{4}{25}$$

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

$$\frac{5m}{4}$$

Critical thinking questions:

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

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

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

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

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