



Algebraic Fractions (A&S)

Algebraic Fractions: Addition & Subtraction

Algebraic fractions are fractions containing algebraic expressions. When applying addition or subtraction operations, the most important step is to ensure that the fractions have a common denominator. This can be achieved with cross multiplication.

EXAMPLE:

Add

$$\frac{x}{8} + \frac{4x}{6}$$

STEP ONE:

Cross multiply

$$\frac{x \times 6}{8 \times 6} + \frac{4x \times 8}{8 \times 6}$$

STEP TWO:

Evaluate

$$\frac{6x}{48} + \frac{32x}{48} = \frac{38x}{48}$$

STEP THREE:

Simplify

$$\frac{19x}{24}$$

Instructions: Answer the questions below, expanding and simplifying your answers where possible.

1

$$\frac{x}{4} + \frac{3}{y}$$

2

$$\frac{a}{3} - \frac{2b}{5}$$

3

$$\frac{6}{d^2} + \frac{e}{2}$$



4	$\frac{j}{4} + \frac{3k}{5}$
5	$\frac{3m}{5} - \frac{1}{n^2}$
6	$\frac{7p^2}{2} + \frac{q}{3}$
7	$\frac{2r^4}{3} - \frac{3s^3}{4}$
8	$\frac{4x}{5} + \frac{v}{9}$
9	$\frac{9k^3}{7} - \frac{3}{j}$



10

$$\frac{4c + 2}{12} + \frac{d + 2}{3}$$

11

$$\frac{w - 3}{8x} - \frac{w + 5}{4}$$

12

$$\frac{7a^2 + 2}{3} + \frac{5b}{2}$$



13

$$\frac{5f + 2}{8} - \frac{g - 4}{2g}$$

14

$$\frac{11s^3 - 4}{6} - \frac{3s^2}{4}$$

15

$$\frac{14 + 2p^5}{4} + \frac{8q}{3q^2}$$



16

$$\frac{2 - 11h}{4} - \frac{13i}{i^2}$$

17

$$\frac{3v^4}{11 - v} + \frac{6v^3}{2}$$

18

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



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1

$$\frac{13}{b^2} + \frac{7b^5}{b^7}$$

2

$$\frac{8m^5}{n} - \frac{4n}{3m}$$

3

$$\frac{11y^2}{9x} + \frac{4x}{y^2}$$



4	$\frac{8}{9q^4} - \frac{4q^2}{5}$
5	$\frac{7c^2}{3c} - \frac{8c}{13}$
6	$\frac{16kl}{4l} + \frac{l}{k}$
7	$\frac{20ab^2}{5b^4} - \frac{a^2}{a}$
8	$\frac{8e^5}{6} - \frac{ef}{e^3}$
9	$\frac{7p^3}{8p} + \frac{q^5}{5}$



10

$$\frac{4s^3 + 1}{8} + \frac{t}{2}$$

11

$$\frac{j - 9}{7j^2} - \frac{5}{j^8}$$

12

$$\frac{13y^2 + 2}{6} - \frac{y^5 - 4}{2}$$



13

$$\frac{x^9 + 9}{w^2} + \frac{6w^2}{4}$$

14

$$\frac{3d^3 - 5d}{d^2} - \frac{7e}{5}$$

15

$$\frac{4k^5 + 1}{k^5} + \frac{3j^2 - 2}{5j^2}$$



16

$$\frac{2n^4 + 7}{3} - \frac{5m^2}{m^5}$$

17

$$\frac{3x + 2}{8(3x + 2)} + \frac{3x + 2}{6x}$$

18

$$\frac{3a(a - 7)}{(a - 7)^4} - \frac{6(a - 7)}{9}$$