11:08 | Addition and Subtraction of Algebraic Fractions

Name: _____ Class: _____

Examples

- Make equivalent fractions with a common denominator.
- Then add or subtract the numerator.

Simplify.

1 $\dfrac{5}{2x} + \dfrac{3}{x} = \dfrac{5 + 2 \times 3}{2x}$

$\qquad = \dfrac{11}{2x}$

2 $\dfrac{3}{x} - \dfrac{2}{x-1} = \dfrac{3(x-1) - 2x}{x(x-1)}$

$\qquad = \dfrac{3x - 3 - 2x}{x(x-1)}$

$\qquad = \dfrac{x-3}{x(x-1)}$

3 $\dfrac{4}{a+3} + \dfrac{5}{a-2} = \dfrac{4(a-2) + 5(a+3)}{(a+3)(a-2)}$

$\qquad = \dfrac{4a - 8 + 5a + 15}{(a+3)(a-2)}$

$\qquad = \dfrac{9a + 7}{(a+3)(a-2)}$

4 $\dfrac{3}{x-1} - \dfrac{2}{x^2-1} = \dfrac{3}{(x-1)} - \dfrac{2}{(x-1)(x+1)}$

$\qquad = \dfrac{3(x+1) - 2}{(x-1)(x+1)}$

$\qquad = \dfrac{3x + 3 - 2}{(x-1)(x+1)} = \dfrac{3x+1}{(x-1)(x+1)}$

Exercise

1 Simplify.

a $\dfrac{2}{x} + \dfrac{5}{x}$

b $\dfrac{3}{x} - \dfrac{1}{x+1}$

c $\dfrac{3}{x} + \dfrac{2}{x-1}$

d $\dfrac{7}{x} - \dfrac{4}{2x-1}$

e $\dfrac{5}{x+3} + \dfrac{6}{x-2}$

f $\dfrac{8}{2m-1} + \dfrac{3}{m+4}$

g $\dfrac{5}{2c-3} - \dfrac{3}{3c-2}$

h $\dfrac{1}{2x+1} - \dfrac{3}{4x-1}$

i $\dfrac{3}{x} + \dfrac{5}{4x}$

j $\dfrac{5}{y+5} + \dfrac{3}{y+7}$

k $\dfrac{3}{a+7} - \dfrac{4}{a-7}$

l $\dfrac{4}{y+2} - \dfrac{1}{y}$

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

n $\dfrac{2x}{x-1} - \dfrac{x}{x+2}$

o $\dfrac{3h}{3h+1} - \dfrac{2h}{4h-1}$

2 Simplify.

a $\dfrac{6}{5a} - \dfrac{3}{2a}$

b $\dfrac{1}{x^2-1} + \dfrac{2}{x-1}$

c $\dfrac{3}{2x} + \dfrac{5}{3x}$

d $\dfrac{5}{x^2-4} + \dfrac{3}{x+2}$

e $\dfrac{2}{x+3} - \dfrac{3}{x^2-9}$

f $\dfrac{3}{2x+1} + \dfrac{5}{6(2x+1)}$

g $\dfrac{7}{x^2+3x} - \dfrac{4}{x+3}$

h $\dfrac{6}{x+1} - \dfrac{5}{x^2+x}$

i $\dfrac{2x}{x^2-1} + \dfrac{3}{x+1}$

j $\dfrac{1}{x+2} - \dfrac{6}{x^2+2x}$

k $\dfrac{4}{7c} - \dfrac{3}{2c}$

l $\dfrac{x}{x^2+4x} + \dfrac{1}{x}$

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1 a $\dfrac{7}{x}$ b $\dfrac{2x+3}{x(x+1)}$ c $\dfrac{5x-3}{x(x-1)}$ d $\dfrac{10x-7}{x(2x-1)}$ e $\dfrac{11x+8}{(x+3)(x-2)}$

f $\dfrac{14m+29}{(2m-1)(m+4)}$ g $\dfrac{9c-1}{(2c-3)(3c-2)}$ h $\dfrac{-2x-4}{(2x+1)(4x-1)}$ i $\dfrac{17}{4x}$ j $\dfrac{8y+50}{(y+5)(y+7)}$

k $\dfrac{-a-49}{(a+7)(a-7)}$ l $\dfrac{3y-2}{y(y+2)}$ m $\dfrac{x^2+5x+4}{(x+2)(x+3)}$ n $\dfrac{x^2+5x}{(x-1)(x+2)}$ o $\dfrac{6h^2-5h}{(3h+1)(4h-1)}$

2 a $\dfrac{-3}{10a}$ b $\dfrac{2x+3}{x^2-1}$ c $\dfrac{19}{6x}$ d $\dfrac{-1+3x}{x^2-4}$ e $\dfrac{2x-9}{x^2-9}$

f $\dfrac{23}{6(2x+1)}$ g $\dfrac{-4x+7}{x^2+3x}$ h $\dfrac{6x-5}{x^2+x}$ i $\dfrac{5x-3}{x^2-1}$ j $\dfrac{x-6}{x^2+2x}$

k $\dfrac{-13}{14c}$ l $\dfrac{2x+4}{x^2+4x}$