

Name Homework Guide

Date _____

Add or Subtract. Identify any x-values for which the expression is undefined

1. $\frac{2x-3}{4x-1} + \frac{3x+4}{4x-1} = \frac{5x+1}{4x-1}, x \neq \frac{1}{4}$

$\frac{2x-3+3x+4}{4x-1} = \frac{5x+1}{4x-1}$

Undefined when $4x-1=0$
 so: $4x \neq 1$
 $x \neq \frac{1}{4}$

2. $\frac{3x-4}{4x+5} - \frac{5x+3}{4x+5} = \frac{-2x-7}{4x+5}, x \neq -\frac{5}{4}$

3. $\frac{4x-3}{2x-5} - \frac{4x+3}{2x-5} = \frac{-6}{2x-5}, x \neq \frac{5}{2}$

$\frac{4x-3-(4x+3)}{2x-5} = \frac{-6}{2x-5}$

Undefined when $2x-5=0$
 so: $2x \neq 5$
 $x \neq \frac{5}{2}$

4. $\frac{x-3}{6x+7} - \frac{3x+2}{6x+7} = \frac{-2x-5}{6x+7}, x \neq -\frac{7}{6}$

5. $\frac{2x-3}{2x-3} + \frac{6x+1}{2x-3} = \frac{8x-2}{2x-3}, x \neq \frac{3}{2}$

$\frac{2x-3+6x+1}{2x-3} = \frac{8x-2}{2x-3}$

Undefined when $2x-3=0$
 so: $2x \neq 3$
 $x \neq \frac{3}{2}$

6. $\frac{x-3}{5x-1} - \frac{x+3}{5x-1} = \frac{-6}{5x-1}, x \neq \frac{1}{5}$

Find the least common multiple of each pair.

7. $4x^2y^3$ and $16x^4y$

$2 \cdot 2 \cdot x \cdot x \cdot y \cdot y \cdot y$ & $2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x \cdot y$

LCM: is never smaller than any part!

$16x^4y^3$

8. $x^2 - 25$ and $x^2 + 10x + 25$

$(x-5)(x+5)(x+5)$

9. $x^2 - 9$ and $x^2 + 8x + 15$

$(x-3)(x+3)$ $(x+3)(x+5)$

$(x-3)(x+3)(x+5)$

10. $2x^2 - 3x - 2$ and $x^2 + 3x - 10$

$(2x+1)(x-2)$ $(x-2)(x+5)$

do not rewrite

$(2x+1)(x-2)(x+5)$

Add or subtract. Identify any x-values for which the expression is undefined.

$$\frac{(2x-1)3x-2}{(2x-1)(x+6)} + \frac{2x-3(x+6)}{(2x-1)(x+6)} = \frac{8x^2+2x-16}{(2x-1)(x+6)}$$

$$\frac{6x^2-4x-3x+2+2x^3+12x-3x-18}{(2x-1)(x+6)}$$

$$\frac{8x^2+2x-16}{(2x-1)(x+6)}$$

$$12. \frac{4x-5}{12x+4} + \frac{3x-1}{3x+1} = \frac{16x-9}{4(3x+1)}$$

$$13. \frac{3x-4}{x^2-9} + \frac{2x-1}{x+3} = \frac{2x^2-4x-1}{(x+3)(x-3)}$$

$$14. \frac{(3x+1)3x-5}{(3x+1)2x-5} - \frac{2x-5}{3x+1} = \frac{5x^2+8x-30}{(3x+1)(2x-5)}$$

$$\frac{9x^2-15x+3x-5-(4x^2-10x-10x+25)}{(3x+1)(2x-5)}$$

$$\frac{9x^2-12x-5-4x^2+20x-25}{(3x+1)(2x-5)} = \frac{5x^2+8x-30}{(3x+1)(2x-5)}$$

$$15. \frac{2x+8}{x^2-16} - \frac{3(x+4)}{(x-4)(x+4)} = \frac{-1}{x-4}$$

$$16. \frac{x+2}{x^2+4x+3} - \frac{x+1}{x+3} = \frac{-x^2-x+1}{(x+1)(x+3)}$$

$$\frac{2x+8-(3x+12)}{(x+4)(x-4)}$$

$$\frac{2x+8-3x-12}{(x+4)(x-4)} = \frac{-x-4}{(x+4)(x-4)} = \frac{-1(x+4)}{(x+4)(x-4)}$$

$$17. \frac{x}{x+1} + \frac{x+2}{x^2+2x+1} = \frac{x^2+2x+2}{(x+1)(x+1)}$$

$$18. \frac{(x+3)2x+1}{(x+3)x-3} - \frac{4}{x^2-9} = \frac{2x^2+7x-1}{(x+3)(x-3)}$$

$$\frac{2x^2+x+6x+3-4}{(x+3)(x-3)}$$

$$\frac{2x^2+7x-1}{(x+3)(x-3)}$$

Simplify. Assume that all expressions are defined.

$$19. \frac{2x-3}{x-2} \cdot \frac{(2x-3)(x+2)}{4x-3} = \frac{(2x-3)(x+2)}{4x-3}$$

$$\frac{4x-3}{x^2-4}$$

$$20. \frac{3x-7}{4x+5} \cdot \frac{(3x-7)(5x-6)}{(4x+5)(6x-1)} = \frac{(3x-7)(5x-6)}{(4x+5)(6x-1)}$$

keep change flip

$$\frac{3x-7}{4x+5} \cdot \frac{5x-6}{6x-1} = \frac{(3x-7)(5x-6)}{(4x+5)(6x-1)}$$

$$21. \frac{2}{x} + \frac{1}{x} = \frac{3(x+2)}{2x^2}$$