

Multiple manipulations

Problem

Expressions collection:

Simplify these algebraic expressions to a single term.

(a) $\frac{4}{x} - \frac{3}{x-2}$

(b) $\frac{4x}{5} + \frac{8x}{15} - \frac{1}{2}$

(c) $x - \frac{5}{x-2} - \frac{5}{x+2}$

(d) $\frac{2x}{x-3} - \frac{x}{x+1} + \frac{6-10x}{(x-3)(x+1)}$

Equations collection:

Solve each equation.

(a) $\frac{3}{x+3} - \frac{1}{x-4} + \frac{57}{(x+3)(x-4)} = 1$

(b) $\frac{4x}{5} - \frac{52}{15} = \frac{8}{3x}$

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

(d) $\frac{x^2 - 2x}{x-4} = \frac{2x}{x-4}$

Inequalities collection:

Solve these inequalities.

(a) $\frac{3(x-1)}{4} < \frac{5x-1}{2}$

(b) $\frac{4x-3}{2} - \frac{2x+2}{5} \geq 0$

(c) $\frac{5}{3} - \frac{1}{x} < \frac{3}{x}$

(d) $\frac{5x+6}{x-2} \leq 2$



As you work through the problems, think about the following questions.

- How can you check if your solutions are correct?
- What approach do you use for each problem?
- Do you use similar or different approaches across the different collections?