

EXPRESSIONS AND EQUATIONS

These examples should help to emphasize the difference between an algebraic expression that can be **simplified**, and a conditional algebraic equation that can be **solved**. Even though the examples may look similar, the techniques used to simplify or to solve are different.

Show all steps that you use to solve or to simplify these. The answers are available for you to check; if you don't get the given answer, see if you can find and correct your mistake.

1. Solve: $x + \frac{12}{5} = \frac{32}{5x}$

2. Simplify: $2x - \frac{1}{5} + \frac{3}{5x}$

3. Subtract: $\frac{x}{2x^2-2} - \frac{1}{4x+4}$

4. Solve: $\frac{x}{2x^2-2} = \frac{1}{4x+4}$

5. Solve: $\frac{3x}{x-2} + \frac{x}{x+2} = \frac{2x-1}{x+2}$

6. Simplify: $\frac{2}{x^2+3x+2} + \frac{4}{x^2+5x+6}$

7. Solve: $\frac{2}{x^2+3x+2} - \frac{4}{x^2+5x+6} = 0$

8. Simplify: $\frac{4 - \frac{1}{x^2}}{2 + \frac{1}{x}}$

Answers: 1. $\left\{\frac{8}{5}, -4\right\}$ 2. $\frac{10x^2-x+3}{5x}$ 3. $\frac{1}{4(x-1)}$ 4. *no solution* 5. $\left\{\frac{-9 \pm \sqrt{97}}{4}\right\}$

6. $\frac{6x+10}{(x+1)(x+2)(x+3)}$ 7. $\{1\}$ 8. $\frac{2x-1}{x}$