

# 1. Algebra Skills 1

Tuesday, August 24, 2021 3:13 PM

## Fractions/Square Root

$$2\frac{2}{3} - \frac{5}{7} =$$

$$\frac{2\frac{1}{3}}{5\frac{2}{3}} =$$

$$\frac{2}{x+2} - \frac{1}{2x-1} =$$

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

Problems for you: Simplify all of the following. Your result should only have one fraction line.

$$\frac{13}{4} - 10\frac{1}{3} =$$

$$\frac{\frac{4}{7}}{\frac{2}{9}} =$$

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

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

$$\frac{x^3 - 9x}{x^2 - 7x + 12} =$$

$$\frac{\frac{1}{x} - \frac{1}{5}}{\frac{1}{x^2} - \frac{1}{25}} =$$

$$\frac{9 - x^{-2}}{3 + x^{-1}} =$$

$$(1 - t)^2 + (2 + 2t)^2$$

$$(t + 1)^2 + (-t - 1)^2 - 2$$

BTW: Why  $(-1 - t)^2 = (1 + t)^2$ ?

$$\frac{1}{t-1} - \frac{1}{t+1} \quad (\text{write as a single fraction})$$

$$x^2 = 4$$

vs.

$$\sqrt{4}$$

A note on taking a square root of a square.

$$\sqrt{x^2} = |x|$$

You:

Simplify:

$$\sqrt{(2+t)^2 - 8t^2}$$

$$\sqrt{(2+t)^2 + 4t^2}$$

## Rules/Tools Fractions/Square Roots

- Dividing by fractions requires multiplying by the reciprocal
- Foil numerator and factor the denominator when working with fractions
- Always order exponents when simplifying an algebraic expression.
- Closed circles  $\leq$  or  $\geq$ , open circles  $>$  or  $<$
- You need a common denominator when adding/subtracting fractions
- $(x/y) \div (m/n) = xn/ym$
- Foil means to expand brackets
- Like terms are terms with the same variables and the same value of exponents
- Because mixed fractions are annoying, make it into proper fractions
- Must multiply each term by a value of one, but the value may be in any form (ex.  $(x+1)/(x+1)$ )
- Square root of a squared number is the absolute value of the number,