

Math 105 Skill Builder #F - 20 Simplifying Complex Fractions

Method 1

Step1 Find the LCD of all fractions appearing in the numerator and denominator.

Step2 Multiply the numerator and the denominator by the LCD. Simplify the numerator and the denominator.

Step3 Write the answer in lowest terms.

For example,

$$\frac{\frac{9}{7}}{\frac{6}{11}} \quad \text{LCD of } \frac{6}{11} \text{ and } \frac{9}{7} \text{ is } 77.$$

$$= \frac{\frac{9}{7} \cdot 77}{\frac{6}{11} \cdot 77} \quad \text{Multiply the numerator and the denominator by the LCD}$$

$$= \frac{9 \cdot 11}{6 \cdot 7} \quad \text{Divide 77 by 7 and 77 by 11.}$$

$$= \frac{3 \cdot 3 \cdot 11}{3 \cdot 2 \cdot 7} \quad \text{Simplify.}$$

$$= \frac{33}{14}$$

Method 2

Step1 Simplify the numerator.

Step2 Simplify the denominator.

Step3 Multiply the numerator by the reciprocal of the denominator.

For example,

$$\frac{\frac{9}{7}}{\frac{6}{11}} = \frac{9}{7} \cdot \frac{11}{6} = \frac{33}{14}$$

Examples:

Simplifying Complex Fractions

$$1) \frac{\frac{11}{5}}{\frac{3}{10}} = \frac{11}{5} \cdot \frac{10}{3} = \frac{22}{3} \quad 2) \frac{\frac{2}{3}}{\frac{4}{5}} = \frac{2}{3} \cdot \frac{5}{4} = \frac{2 \cdot 5}{3 \cdot 2 \cdot 2} = \frac{5}{6} \quad 3) \frac{\frac{1}{3} - \frac{1}{4}}{\frac{3}{6}} = \frac{\frac{4}{12} - \frac{3}{12}}{\frac{3}{6}} = \frac{\frac{1}{12}}{\frac{3}{6}} = \frac{1}{12} \cdot \frac{10}{3} = \frac{5}{18}$$

Math 105 Skill Builder #F - 20
Simplifying Complex Fractions

Perform the indicated operation:

$$1) \frac{\frac{1}{5}}{\frac{2}{9}}$$

$$2) \frac{1 - \frac{2}{3}}{\frac{4}{5}}$$

$$3) \frac{\frac{2}{3} + \frac{4}{5}}{\frac{1}{3}}$$

$$4) \frac{\frac{2}{5} - \frac{1}{3}}{\frac{1}{5}}$$

$$5) \frac{\frac{5}{6}}{\frac{5}{4}}$$

Math 105 Skill Builder #F - 20
Simplifying Complex Fractions

Answers:

1) $\frac{9}{10}$

2) $\frac{5}{12}$

3) $\frac{22}{5}$

4) $\frac{1}{3}$

5) $\frac{2}{3}$

Prepared by: Manush Movsisyan, Spring 2010