6.5 Complex Fractions

Need To Know

- What are complex fractions?
- Two methods to simplify complex fractions

Complex Fractions

Complex fractions are fractions of fractions.
There are messy ones and really messy ones.

Examples:

$$\frac{\frac{2}{3}}{\frac{4}{5}} \qquad \frac{\frac{4}{x}-\frac{1}{x^2}}{\frac{2}{x^2}} \qquad \frac{3+\frac{1}{5}}{1-\frac{3}{5}} \qquad \frac{\frac{5}{4x^3}-\frac{3}{8x}}{\frac{3}{2x}-\frac{3}{4x^3}}$$

Complex Fractions

What is another interpretation of fractions?

$$\frac{\frac{2}{3}}{\frac{4}{5}}$$

Recall Division:

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$$

Complex Fractions – Method #1

Simplify

$$\frac{\frac{4}{x} - \frac{1}{x^2}}{\frac{2}{x^2}}$$

Method #1

(Single fraction in denominator)

1)

2)

Complex Fractions – Method #2

Simplify

$$\frac{3 + \frac{1}{5}}{1 - \frac{3}{5}}$$

Method #2

(Two or more terms in denom.)

1)

2)

Complex Fractions – Method #2

Simplify

$$\frac{\frac{5}{4x^3} - \frac{3}{8x}}{\frac{3}{2x} - \frac{3}{4x^3}}$$

Method #2

(Two or more terms in denom.)

1) Clear all denominators
2) Multiply by a "fancy one" of the LCD of all fractions

Complex Fractions – Method #2

Simplify

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

Method #2

(Two or more terms in denom.)

1) Clear all denominators
2) Multiply by a "fancy one" of the LCD of all fractions

6.5 Conclusion

Method #1

(Single fraction in denominator)

1) See fractions a division
2) Change to multiplication by the reciprocal

Method #2

(Two or more terms in denom.)

1) Clear all denominators
2) Multiply by a "fancy one" of the LCD of all fractions