Complex Fractions: (also known as Compound Fractions)
Fractions whose numerators and/or denominators also have fractions.

Simplify:

$$\frac{3+\frac{4}{3}}{\frac{11}{6}-1}$$

There are many methods to do this, I'll focus on two methods.

Get ALL the terms of the complex fraction to have the LCD.
Then you can cancel all of the denominators.

$$\frac{\frac{6}{6}\cdot\frac{3}{1}+\frac{4}{3}\cdot\frac{2}{2}}{\frac{11}{6}-\frac{1}{1}\cdot\frac{6}{6}}$$

$$\frac{\frac{18}{6}+\frac{8}{6}}{\frac{11}{6}-\frac{6}{6}}=\frac{18+8}{11-6}=\frac{26}{5}$$

Find LCM of all the denominators in the complex fraction.
Then multiply the top and bottom of the complex fraction by this LCM.

$$\frac{3+\frac{4}{3}}{\frac{11}{6}-1}\cdot\frac{6}{6}=\frac{18+8}{11-6}=\frac{26}{5}$$

Simplify:

Get common denominator then cancel them.

$$\frac{\frac{xy^3}{xy^3}\cdot\frac{2}{x}+\frac{5}{y^3}\cdot\frac{x^2}{x^2}}{\frac{y^3}{y^3}\cdot\frac{3}{x^2}-\frac{6}{y^2}\cdot\frac{x^2y}{x^2y}}$$

$$=\frac{\frac{2xy^3}{x^2y^3}+\frac{5x^2}{x^2y^3}}{\frac{3y^3}{x^2y^3}-\frac{6x^2y}{x^2y^3}}$$

$$=\frac{2xy^3+5x^2}{3y^3-6x^2y}$$

Get rid of all denominators first.

$$\frac{\frac{2}{x}+\frac{5}{y^3}}{\frac{3}{x^2}-\frac{6}{y^2}}\cdot\frac{x^2y^3}{x^2y^3}$$

$$=\frac{2xy^3+5x^2}{3y^3-6x^2y}$$

Simplify:

$$\frac{\frac{10}{x}+\frac{4}{xy}}{\frac{2}{x^2y}-\frac{3}{xy^2}}\cdot\frac{x^2y^2}{x^2y^2}=\frac{10xy^2+4xy}{2y-3x}$$

Simplify:

$$\frac{6+\frac{2}{x-5}}{\frac{1}{x-5}-8}\cdot\frac{x-5}{x-5}$$

$$=\frac{6x-30+2}{1-8x+40}$$

$$=\frac{6x-28}{-8x+41}$$

Simplify:

$$\frac{\frac{3}{x+2}}{\frac{1}{x+5}+\frac{10x}{x^2+7x+10}}\cdot\frac{(x+2)(x+5)}{(x+2)(x+5)}$$

$$\frac{10x}{(x+2)(x+5)}$$

$$=\frac{3(x+5)}{x+2+10x}=\frac{3x+15}{11x+2}$$

Simplify:

$$\frac{\dfrac{4x}{x^2+8x+7}}{\dfrac{5x}{x^2+6x-7}+\dfrac{6}{x^2-1}} \cdot \frac{(x+7)(x+1)(x-1)}{(x+7)(x+1)(x-1)}$$

$(x+7)(x-1)$ $\quad$ $(x+1)(x-1)$

$$= \frac{4x(x-1)}{5x(x+1)+6(x+7)} = \frac{4x^2-4x}{5x^2+11x+42}$$

You can now finish Hwk #9

Hwk #9: Sec 9-5

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Problems 26, 28, 44, 46-48