Complex fractions are fractions with fractions inside them.

Example 1 – Simplify $\frac{2/5}{4/25}$

Step 1- Simplify the numerator into one fraction
This is already done.

Step 2- Simplify the denominator into one fraction
This is also complete.

Step 3-Multiply the **numerator** and the **reciprocal of the denominator** (remember that a fraction bar is a big division [÷] symbol)

$$\frac{2/5}{4/25} = \frac{2}{5} \div \frac{4}{25} = \frac{2}{5} \bullet \frac{25}{4} = \frac{5}{2}$$

$$\boxed{\frac{\mathbf{5}}{\mathbf{2}}}$$

Example 2 – Simplify $\dfrac{\frac{1}{m}+\frac{1}{m^2}}{\frac{2}{m}+\frac{2}{m^2}}$

Step 1- Simplify the numerator into one fraction

$$\frac{1}{m}+\frac{1}{m^2}=\frac{1}{m}\bullet\frac{m}{m}+\frac{1}{m^2}=\frac{m}{m^2}+\frac{1}{m^2}=\frac{m+1}{m^2}$$

Step 2- Simplify the denominator into one fraction

$$\frac{2}{m}+\frac{2}{m^2}=\frac{2}{m}\bullet\frac{m}{m}+\frac{2}{m^2}=\frac{2m}{m^2}+\frac{2}{m^2}=\frac{2m+2}{m^2}$$

Step 3-Multiply the **numerator** and the **reciprocal of the denominator** (remember that a fraction bar is a big division [÷] symbol)

$$\frac{\frac{m+1}{m^2}}{\frac{2m+2}{m^2}}=\frac{m+1}{m^2}\div\frac{2m+2}{m^2}=\frac{m+1}{m^2}\bullet\frac{m^2}{2m+2}$$

$$\frac{m+1}{m^2}\bullet\frac{m^2}{2m+2}=\frac{m+1}{m^2}\bullet\frac{m^2}{2(m+1)}=\frac{1}{2}$$

$$\boxed{\frac{1}{2}}$$

Example 3 – Simplify $\dfrac{\frac{2}{x^2y}+\frac{1}{xy^2}}{\frac{3}{x^2y}-\frac{2}{xy^2}}$

Step 1- Simplify the numerator into one fraction

$$\frac{2}{x^2y}+\frac{1}{xy^2}=\frac{2}{x^2y}\cdot\frac{y}{y}+\frac{1}{xy^2}\cdot\frac{x}{x}=\frac{2y}{x^2y^2}+\frac{x}{x^2y^2}=\frac{2y+x}{x^2y^2}$$

Step 2- Simplify the denominator into one fraction

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

Step 3-Multiply the **numerator** and the **reciprocal of the denominator** (remember that a fraction bar is a big division [÷] symbol)

$$\frac{\frac{2y+x}{x^2y^2}}{\frac{3y-2x}{x^2y^2}}=\frac{2y+x}{x^2y^2}\div\frac{3y-2x}{x^2y^2}=\frac{2y+x}{x^2y^2}\cdot\frac{x^2y^2}{3y-2x}$$

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

$$\boxed{\frac{2y+x}{3y-2x}}$$