Simplifying Complex Fractions

① $\dfrac{\frac{3}{x}}{\frac{15}{x}} = \dfrac{3}{x} \div \dfrac{15}{x} = \dfrac{3}{x} \cdot \dfrac{x}{15} = \dfrac{3 \cdot x}{x \cdot 15} = \dfrac{1}{5}$

② $\dfrac{\frac{4}{5}}{2^3+9} = \dfrac{\frac{4}{5}}{8+9} = \dfrac{\frac{4}{5}}{17}$ $\quad \dfrac{4}{5} \div \dfrac{17}{1} = \dfrac{4}{5} \cdot \dfrac{1}{17} = \dfrac{4}{85}$

③ $\dfrac{\frac{c^2}{8}}{\frac{c}{2}} \quad \dfrac{c^2}{8} \div \dfrac{c}{2} = \dfrac{c^2}{8} \cdot \dfrac{2}{c} = \dfrac{2 \cdot c \cdot c}{8 \cdot c} = \dfrac{c}{4}$

④ $\dfrac{\frac{1}{3}+\frac{3}{4}}{\frac{7}{8}-\frac{1}{2}}$

$\dfrac{1}{3} + \dfrac{3}{4}$

$\dfrac{1 \cdot 4}{3 \cdot 4} + \dfrac{3 \cdot 3}{4 \cdot 3} = \dfrac{4}{12} + \dfrac{9}{12} = \dfrac{13}{12}$

$\dfrac{7}{8} - \dfrac{1}{2}$

$\dfrac{7 \cdot 1}{8 \cdot 1} - \dfrac{1 \cdot 4}{2 \cdot 4} = \dfrac{7}{8} - \dfrac{4}{8} = \dfrac{3}{8}$

$\dfrac{\frac{13}{12}}{\frac{3}{8}} \rightarrow \dfrac{13}{12} \div \dfrac{3}{8} = \dfrac{13}{12} \cdot \dfrac{8}{3} = \dfrac{13 \cdot 2 \cdot 4}{4 \cdot 3 \cdot 3} = \dfrac{26}{9}$