

Simplifying Complex Fractions

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

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

③ $\frac{\frac{c^2}{8}}{\frac{c}{2}} = \frac{c^2}{8} \div \frac{c}{2} = \frac{c^2}{8} \cdot \frac{2}{c} = \frac{\cancel{2} \cdot c^{\cancel{2}-1}}{\cancel{8} \cdot \cancel{c}} = \frac{c}{4}$

④ $\frac{\frac{1}{3} + \frac{3}{4}}{\frac{7}{8} - \frac{1}{2}} = \frac{1 \cdot 4 \cdot 4}{3 \cdot 4 \cdot 12} + \frac{3 \cdot 3 \cdot 9}{4 \cdot 3 \cdot 12} = \frac{4}{12} + \frac{9}{12} = \frac{13}{12}$
 $\frac{7 \cdot 1 \cdot 7}{8 \cdot 1 \cdot 8} - \frac{1 \cdot 4 \cdot 4}{2 \cdot 4 \cdot 8} = \frac{7}{8} - \frac{4}{8} = \frac{3}{8}$

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