A few more things to practice...

Writing Fractions in Reduced Form

① $\dfrac{1}{x} + 2 \cdot \dfrac{x}{x} = \dfrac{1}{x} + \dfrac{2x}{x} = \boxed{\dfrac{1+2x}{x}}$

② $\dfrac{x}{x-y}\dfrac{(x+y)}{(x+y)} \;\; \dfrac{y}{x+y}\dfrac{(x-y)}{(x-y)} = \dfrac{x(x+y)}{(x+y)(x-y)} - \dfrac{y(x-y)}{(x+y)(x-y)} = \dfrac{x^2+xy-xy+y^2}{x^2-y^2} = \boxed{\dfrac{x^2+y^2}{x^2-y^2}}$

③ $\dfrac{x^2-y^2}{2xy} \div \dfrac{y^2-x^2}{4x^2y} = \dfrac{(x+y)(x-y)}{2xy} \cdot \dfrac{4x^2y}{(y-x)(y+x)} = \dfrac{2x(x-y)}{-(x-y)} = \boxed{-2x}$

Simplifying Compound Fractions

① $\dfrac{x+y}{\frac{y}{y}\cdot\frac{1}{x} + \frac{1}{y}\cdot\frac{x}{x}} = \dfrac{x+y}{1} \div \dfrac{y+x}{xy} = \dfrac{x+y}{1} \cdot \dfrac{xy}{y+x} = \boxed{xy}$

② $\dfrac{\frac{b}{b}\frac{1}{a} + \frac{1}{b}\frac{a}{a}}{\frac{b}{b}\frac{b}{a} - \frac{a}{b}\frac{a}{a}} = \dfrac{b+a}{ab} \div \dfrac{b^2-a^2}{ab} = \dfrac{b+a}{ab} \cdot \dfrac{ab}{(b-a)(b+a)} = \boxed{\dfrac{1}{b-a}}$

③ $\dfrac{\frac{x+5}{x+5}2 - \frac{12}{x+5}}{\frac{x-3}{x-3}2 + \frac{3}{x-3}} = \dfrac{2(x+5)-12}{x+5} \div \dfrac{2(x-3)+3}{x-3} = \dfrac{2x-2}{x+5} \cdot \dfrac{x-3}{2x-3} = \dfrac{(2x-2)(x-3)}{(x+5)(2x-3)}$

$= \boxed{\dfrac{2x^2-8x+6}{2x^2+7x-15}}$