Ex) $\dfrac{1+\frac{1}{x-1}}{1+\frac{1}{x^2-1}}$

$\dfrac{1+\frac{1}{(x-1)}}{1+\frac{1}{(x-1)(x+1)}}$

LCD: $(x-1)(x+1)$

$\dfrac{(x-1)(x+1)\cdot\left[1+\frac{1}{(x-1)}\right]}{(x-1)(x+1)\left[1+\frac{1}{(x-1)(x+1)}\right]}$

$\dfrac{(x-1)(x+1)+(x+1)}{(x-1)(x+1)+1}$

$\dfrac{(x+1)[(x-1)+1]}{x^2-1+1}$

$\dfrac{x(x+1)}{x^2}$

$\dfrac{x+1}{x}$

Ex/ $\dfrac{xy^{-1}-(x-y)(x+y)^{-1}}{xy^{-1}+(x+y)(x-y)^{-1}}$

$\dfrac{\frac{x}{y}-\frac{(x-y)}{(x+y)}}{\frac{x}{y}+\frac{(x+y)}{(x-y)}}$

LCD: $y(x+y)(x-y)$

$\dfrac{y(x+y)(x-y)\left[\frac{x}{y}-\frac{(x-y)}{(x+y)}\right]}{y(x+y)(x-y)\left[\frac{x}{y}+\frac{(x+y)}{(x-y)}\right]}$

$\dfrac{x(x+y)(x-y)-y(x-y)^2}{x(x+y)(x-y)+y(x+y)^2}$

*use GCF!

$\dfrac{(x-y)[x(x+y)-y(x-y)]}{(x+y)[x(x-y)+y(x+y)]}$

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

$\dfrac{(x-y)(x^2+y^2)}{(x+y)(x^2+y^2)}$

$\dfrac{x-y}{x+y}$

Ex/ $\dfrac{\frac{1}{a+1}+\frac{1}{a-1}}{\frac{1}{a+1}-\frac{1}{a-1}}$

LCD: $(a-1)(a+1)$

$\dfrac{(a-1)(a+1)\left[\frac{1}{(a+1)}+\frac{1}{(a-1)}\right]}{(a-1)(a+1)\left[\frac{1}{(a+1)}-\frac{1}{(a-1)}\right]}$

$(a-1)+(a+1)$