ER 4.2 Key

① $\frac{3a+1}{(a+1)(a-1)} - \frac{1(a-1)}{(a+1)(a-1)}$

$\frac{3a+1-a+1}{(a+1)(a-1)}$

$\frac{2a+2}{(a+1)(a-1)}$

$\frac{2(a+1)}{(a+1)(a-1)}$

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

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② $2 \mid 3 \;\; 0 \;\; -4 \mid 2$

$\downarrow \;\; 6 \;\; 12 \mid 16$

$3 \;\; 6 \;\; 8 \;\; (18)$

It is NOT a factor b/c there's a remainder when I divide

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③ $\frac{10(y-4)}{2(y+4)(y-4)} - \frac{2(7y+8)}{2(y+4)(y-4)} = \frac{-8(y+4)}{2(y-4)(y+4)}$

$\frac{10y-40-14y-16}{2(y+4)(y-4)} = \frac{-8y-32}{2(y+4)(y-4)}$

$\frac{-4y-56}{2(y+4)(y-4)} + \frac{8y+32}{2(y+4)(y-4)} = 0$

$\frac{4y-24}{2(y+4)(y-4)} = 0$

$4y-24=0$

$4y=24$

$y=6$

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④ $x=\{-3,-1,2\}$

$f(x)=(x+3)(x+1)(x-2)$

$f(x)=(x+3)(x^2-x-2)$

$f(x)=x^3-2x^2+5x+6$

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⑤ $x=-3$

$-3 \mid 1 \;\; 6 \;\; 13 \mid 12$

$\downarrow \;\; -3 \;\; -9 \mid -12$

$1 \;\; 3 \;\; 4 \mid (0)$

$f(x)=(x+3)(x^2+3x+4)$