

```

 $\overline{g}_i[h[F_, L_]] /; i > 1 := h[$ 
  Permute[F, Cycles[{{i, i + 1}}]],
  Expand[L /. { $x_i \rightarrow \frac{1}{t_{F[[i+1]]}} x_{i+1} + \frac{t_{F[[i]]} - 1}{t_{F[[i+1]]}} x_i, x_{i+1} \rightarrow x_i$ }] // Simplify
]

```