



$$\begin{aligned}
 & \beta \neq i, i+1 \\
 & g_{i,\beta} = \delta_{i,\beta} + g_{i+1,\beta} \quad \Rightarrow \quad g_{i,\beta} = g_{i+1,\beta} = g_{i+2,\beta} \\
 & g_{i+1,\beta} = \delta_{i+1,\beta} + T g_{i+2,\beta} + (1-T) g_{i+1,\beta} \\
 & \Rightarrow g_{i+1,\beta} = T^{-1} \delta_{i+1,\beta} + g_{i+2,\beta}
 \end{aligned}$$

In[361]:= Q = CF@PowerExpand[-(x<sub>i</sub> (p<sub>i</sub> - T<sup>s</sup> p<sub>i+1</sub> + (T<sup>s</sup> - 1) p<sub>j+1</sub>) + x<sub>j</sub> (p<sub>j</sub> - p<sub>j+1</sub>)) /. {i → j, j → i, T → T<sup>-1</sup>}]

Out[361]= -p<sub>i</sub> x<sub>i</sub> + p<sub>i+1</sub> x<sub>i</sub> + T<sup>-s</sup> (-1 + T<sup>s</sup>) p<sub>i+1</sub> x<sub>j</sub> - p<sub>j</sub> x<sub>j</sub> + T<sup>-s</sup> p<sub>i+1</sub> x<sub>j</sub>      Vars appearing: p<sub>i</sub>, p<sub>j</sub>, x<sub>i</sub>, x<sub>j</sub>, p<sub>i+1</sub>, p<sub>j+1</sub>

guaranteed locality only for x<sub>i</sub>, x<sub>j</sub>