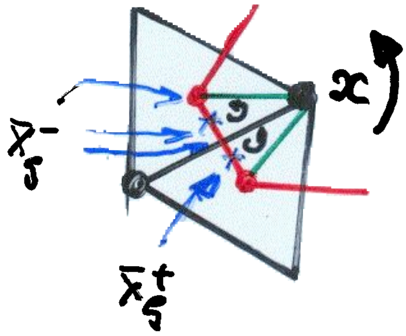
■ **Remark 3.3:** on piecewise continous data, i.e. $a, c, f \in PC(\bar{\Omega})$ and the interfaces are covered by the primary grid $\curvearrowright$ $a, c, f \in C(\bar{\delta}_r)$ $\forall r \in R_h$ $\forall h \in \Theta$:

① $\bar{a}(x_\xi) := \left(a(\bar{x}_\xi^-)\, s(\bar{x}_\xi^-) + a(\bar{x}_\xi^+)\right) / s(x_\xi)$

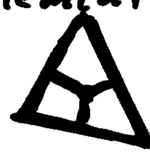


$$\int_{\partial\mathcal{H}} = \sum \int_{\triangle} = \left[\int_{\triangle} + \int_{\triangle}\right] = \ldots$$

② $\displaystyle\int_{\mathcal{H}(x)} c\,u\,dy \approx \sum_{r\in B(x)} \int_{\mathcal{H}_r} c\,dy \cdot u(x) \approx \ldots$

③ $\displaystyle\int_{\mathcal{H}(x)} f(y)\,dy = \sum_{r\in B(x)} \int_{\mathcal{H}_r} f(y)\,dy \approx \ldots$

Different approximation techniques and assembling technologies are possible, e.g. the elementwise procedure known from the FEM:



■ $\boxed{\text{E 3.1}}$ Show that in $(6)_L$ the difference operator L_h is monotone! If $c(x) \geq \underline{c} = \text{const} > 0$ $\forall x \in \bar{\Omega}$, then L_h is even strongly monotone!

$$L_h v(x) := A(x)\,v(x) - \sum_{\xi\in S'(x)} B(x,\xi)\,v(\xi)\,,\quad x \in \mathring{\omega}$$

is called (strongly) monotone if

$$A(x) > 0\,,\ B(x,\xi) > 0\ \ \forall \xi \in S'(x)\ \ \forall x \in \mathring{\omega},$$

$$D(x) := L_h \cdot 1 = A(x) - \sum_{\xi\in S'(x)} B(x,\xi) \ \begin{matrix}\geq 0\\ > 0\end{matrix}\ \ \forall x \in \mathring{\omega}$$