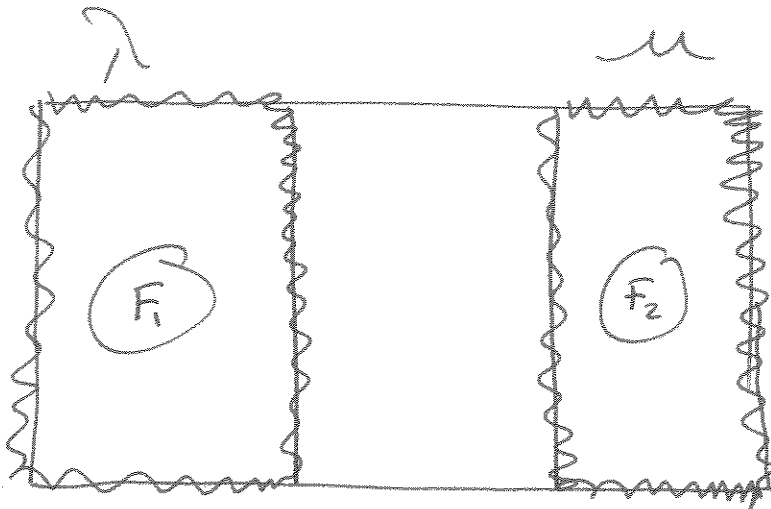


Exercise 1



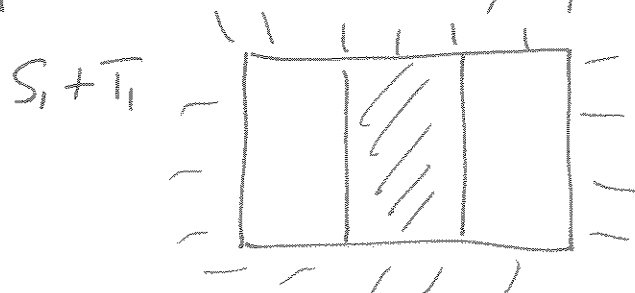
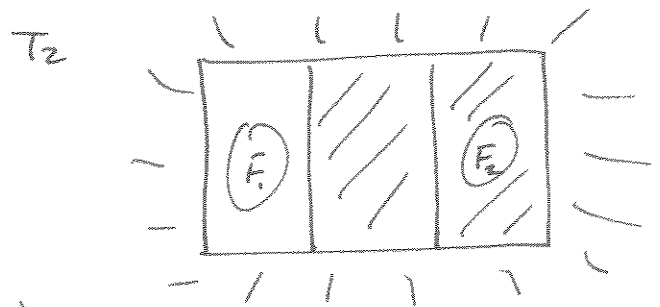
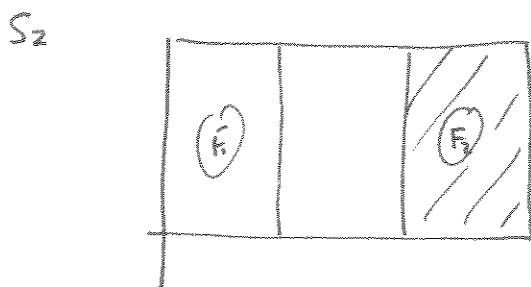
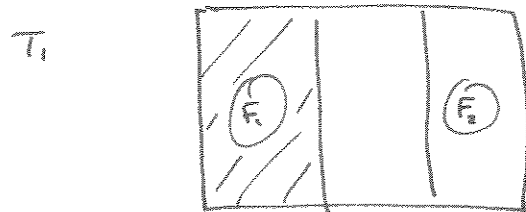
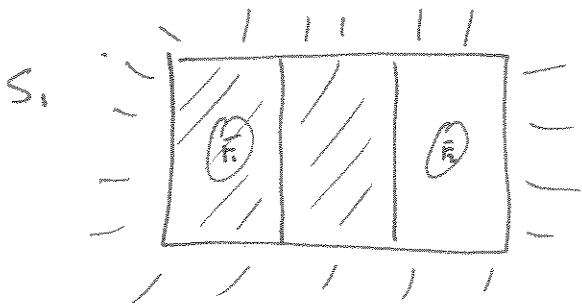
λ and μ are 1-cycles which are not boundaries in $\mathbb{R}^2 - (F_1 \cup F_2)$.
Then

$$\begin{aligned} \lambda &= \partial T_1 = \partial T_2 && \text{in } \mathbb{R}^2 \\ \mu &= \partial S_1 = \partial S_2 && \text{in } \mathbb{R}^2 \end{aligned}$$

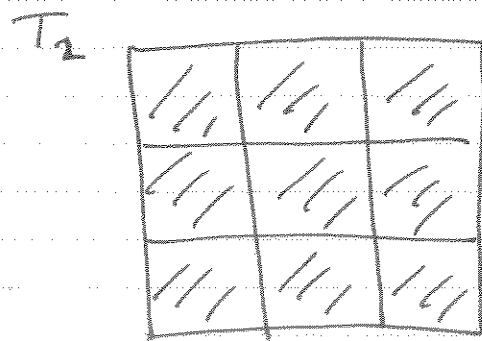
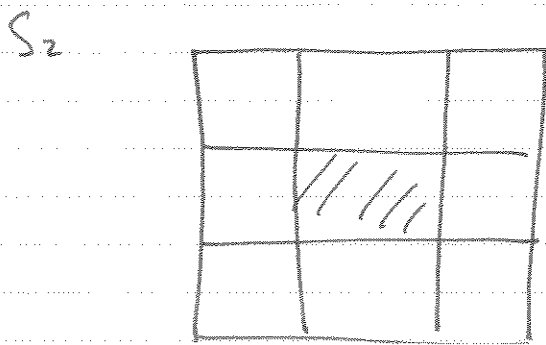
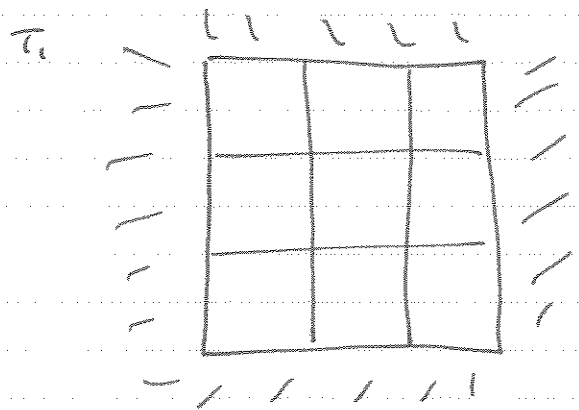
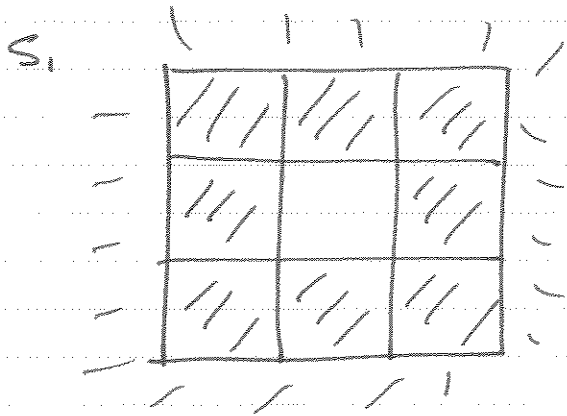
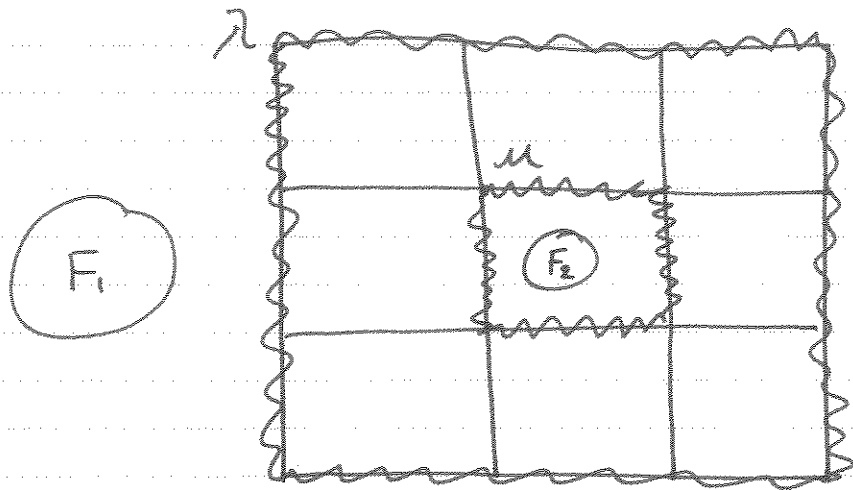
and we may assume $F_i \subseteq S_i$ and $F_i \subseteq T_i$ for $i=1,2$.

Then $T_1 + S_1 \cap (F_1 \cup F_2) = \emptyset$ so $\lambda + \mu = \partial(T_1 + S_1)$ in $\mathbb{R}^2 - (F_1 \cup F_2)$.

Draw S_1, T_1, S_2, T_2 and $S_1 + T_1$.



Exercise 2 Same Exercise for



$S_1 + T_1$

