

Justify all answers!

(6 pts)

(1) [+4] Let $f : A \rightarrow B$ and let $S, T \subseteq B$. Prove that

$$\text{PreIm}_f(S \cup T) = \text{PreIm}_f(S) \cup \text{PreIm}_f(T).$$

(2) [+2] Let $f : A \rightarrow B$ and let $S, T \subseteq A$. Prove or disprove that

$$\text{Im}_f(S \setminus T) \subseteq \text{Im}_f(S) \setminus \text{Im}_f(T).$$