

Name:

1] Consider a topological space X and a sequence $\{x_n\}_{n \in \mathbb{N}}$ in X .

1.a] What exactly does it mean to say that $\{x_n\}$ converges?

1.b] What exactly does it mean to say that $\{x_n\}$ does not converge?

2] Now consider a function $f: X \rightarrow Y$ between topological spaces X and Y , and a sequence $\{x_n\}$ in X . Show that if f is continuous and $\{x_n\}$ converges to x , then $\{f(x_n)\}$ converges to $f(x)$.