

Homework # 20 (due 04/17/2020)

1. Let S, T, U be sets and $f: S \rightarrow T$ and $g: T \rightarrow U$ be functions. Decide if the following statements are true or false. If true, provide a proof, if false, provide a counterexample.

(a) If $g \circ f$ is onto, then f is onto

(b) If $g \circ f$ is onto, then g is onto.

(c) If $g \circ f$ is one-to-one, then f is one-to-one.

(d) If $g \circ f$ is one-to-one, then g is one-to-one.

2. Let $[a, b]$ and $[c, d]$ be two arbitrary non-empty intervals in \mathbb{R} . Find a bijection $f: [a, b] \rightarrow [c, d]$.