CSL202: Discrete Mathematical Structures (Semester-I-2018-19) Quiz-04

Name: _____

Entry number: _____

There are 2 questions for a total of 10 points.

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1. (5 points) Prove or disprove: $[-1, 1]$ has the same cardinality as $(1, 3) \cup (4, 6)$.

2. Let A, B, C be non-empty sets, and let $g : A \to B$ and $h : A \to C$ and let $f : A \to B \times C$ defined as:

$$f(x) = (g(x), h(x)).$$

Answer the following:

(a) (½ point) State true or false: If f is onto, then both g and h are onto.

(a) _____

(b) (½ point) State true or false: If g and h are onto, then f is onto.

(b) _____

(c) (½ point) State true or false: If at least one of g, h is one-to-one, then f is one-to-one.

(c) _____

(d) (½ point) State true or false: If g and h are not one-to-one, then f is not one-to-one.

(d) _____

(e) (3 points) Give reasons for your answer to part (b).