

Preliminary test

Monday, 29th September 2014

Ex. 1 Given the following subsets of \mathbb{R}

$$S = [-1, 1],$$

$$T = \{-1\} \cup [0, 2] \cup (3, +\infty)$$

determine:

$$S \cup T, S \cap T, S^c, T^c.$$

Ex. 2 For T as in the above exercise determine:

- interior and exterior points, accumulation points and isolated points;
- if T is open, closed or neither open nor closed.

Ex. 3 Determine if the following function is injective and/or surjective on the specified domain:

$$f : [0, 1] \rightarrow \mathbb{R}, \quad f(x) = x$$