# Answer on Question #84078 – Math – Real Analysis

## Question

**a)** Every infinite set is an open set.

**b)** A necessary condition for a function $f$ to be integrable is that it is continuous.

true or false?

## Solution

**a)** False. A counterexample can be the set of integer numbers {…, –2, –1, 0, 1, 2, …} on the real axis, which is infinite as a set of points but not open (it is closed, in fact), or intervals of type $[a, b)$, $(a, b]$, $[a, b]$ with $a < b$, which are infinite as sets of points, but not open.

**b)** False. The function $f(x)$ such that $f(x) = 0$ for $x \leq 0$, and $f(x) = 1$ for $x > 0$ is integrable on every finite interval, but it is not continuous at $x = 0$.

**Answer: a)** false; **b)** false.