MATH 203 HOMEWORK 2

A. Give an explicit one-to-one correspondance between

(i) the points of two open intervals

(ii) the points of two closed intervals

(iii) the points of a closed interval and the points of an open interval

(iv) the points of the closed interval $[0, 1]$ and the set $\mathbb{R}$.

B. Rudin, Chapter 2 (page 43), #2, 3, 5, 6, 7, 8, 9.

C. Let X be the real line with the discrete metric $d(x, y) = 1$ if $x \neq y$, $d(x, y) = 0$ if $x = y$. Suppose $a \in X$. For this case, what are the sets $B(a, 1/2)$, $B(a, 1)$? What is the closure of $B(a, 1)$?