CSC/MAT-220: Discrete Structures

Homework 3

Due: 9/22/2017

Book Problems

Please do each of the following problems from your book:
14.16, 14.17, 15.14, 15.15, 16.2, 16.18

Other Problems

I. Let S be the Cartesian coordinate plane $\mathbb{R} \times \mathbb{R}$ and define a relation R on S by $(a, b)R(c, d)$ if and only if $a = c$. Verify that R is an equivalence relation and describe a typical equivalence class $[(a, b)]$.

II. Let $S = \{a, b, c, d\}$ and let $\mathcal{P} = \{\{a\}, \{b, c\}, \{d\}\}$. Describe the equivalence relation R on S determined by $\mathcal{P}$.

III. A relation R on a set A is called *circular* if for all $a, b \in A$, aRb and bRc imply cRa. Prove: A relation is an equivalence relation if and only if it is reflexive and circular.