Intro to Abstract Mathematics
Spring 2020

Assignment 11.2
Due April 22

Exercise 1. Prove that $C = \{(x, y) \in \mathbb{R}^2 \mid x - y \in \mathbb{Z}\}$ is an equivalence relation on $\mathbb{R}$.

Exercise 2. Prove that $P = \{(\mathbf{v}, \mathbf{w}) \in \mathbb{R}^2 \times \mathbb{R}^2 \mid \exists \lambda \in \mathbb{R}^\times (\mathbf{v} = \lambda \mathbf{w})\}$ is an equivalence relation on $\mathbb{R}^2$. Here $\mathbb{R}^\times = \mathbb{R} \setminus \{0\}$.