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Introduction to Abstract Mathematics Spring 2017

Assignment 6.2 Due February 27

Exercise 1. In this exercise we'll provide a different proof of our favorite fact, that $\sqrt{2}$ is irrational.

- **a.** Assume $\sqrt{2}$ is rational, and let $p, q \in \mathbb{N}$ with $p/q = \sqrt{2}$. Show that 0 .
- **b.** With p, q as above, show that

$$\frac{2q-p}{p-q} = \sqrt{2}.$$

 ${\bf c.}$ Use the Well-Ordering Principle and parts ${\bf a}$ and ${\bf b}$ to arrive at a contradiction.