Math 215 – Fall 2017

Practice Homework 14 – Assigned November 2nd, due November 6th

Note: Remember that you must show your work to get full credit for a problem.

1. Please prove or disprove that each of the following functions is 1-1 and/or onto. (So two carefully written proofs must be given for each part.)

   a. $f : \mathbb{R} \to \mathbb{R}$ given by $f(x) = 4x - 1$

   b. $f : \mathbb{N} \to \mathbb{N}$ given by $f(n) = 4n - 1$

   c. $f : \mathcal{P}(\{a, b, c, d\}) \to \mathcal{P}(\{a, b, c, d\})$ given by $f(S) = S \cap \{a, b\}$

   d. $f : \mathcal{P}(\{a, b, c, d\}) \to \mathcal{P}(\{a, b, c, d\})$ given by $f(S) = S \cup \{a\}$

   e. $f : \mathbb{R}^2 \to \mathbb{R}$ given by $f(x, y) = x^2 + y^2$

   f. $f : \mathbb{R}^2 \to \mathbb{R}$ given by $f(x, y) = xy$