Homework #9

Last Name: _____

Name : _____

PSID: _____

TRANSITION TO ADVANCED MATHEMATICS
HOMEWORK#9 – DUE TUESDAY, 04/10

Problem 1. Exercise 4.1: Problem 3(a,d,g,h).

Problem 2. Exercise 4.1: Problem 12.

Problem 3. Exercise 4.2: Problem 1(b,g,i,j).

Problem 4. Exercise 4.2: Problem 3(a,c).

Problem 5. Exercise 4.3: Problem 4.

Problem 6. Define $f : \mathbb{R} \to \mathbb{R}$ by $f(x) = x^3 - 5$.
Prove that f is one-to-one and onto.

Problem 7. Define $f : \mathbb{R} \to [0, \infty)$ by $f(x) = 2^x$.
Prove that f is one-to-one, but not onto.

Problem 8. Define $f : \mathbb{R} \times \mathbb{R} \to \mathbb{R} \times \mathbb{R}$ by $f(x, y) = (2x - y, y - x)$.
Determine whether f is one-to-one and/or onto. Explain why.

Problem 9. Define $g : \mathbb{N} \times \mathbb{N} \to \mathbb{Z} \times \mathbb{Z}$ by $g(x, y) = (2x - y, y - x)$.
Determine whether f is one-to-one and/or onto. Explain why.