MATH 3012-QHS: Applied Combinatorics
Fall 2020
Worksheet 2

Name: _____

Due Date: Every Tuesday 11.59 pm

Problem 1. Let $\mathbb{N}$ denote the set of positive integers. When $f : \mathbb{N} \to \mathbb{N}$ is a function, let $E(f)$ be the function defined by $E(f)(n) = 2^{f(n)}$. What is $E^5(n^2)$?

Problem 2. If you have to put $n + 1$ pigeons into n holes, you have to put two pigeons into the same hole. What happens if you have to put $mn + 1$ pigeons into m holes.

Problem 3. Draw a graph with 6 vertices having degrees 5, 4, 4, 2,1,and 1 or explain why such a graph does not exist.