# University of Minnesota
# Math Refresher
SUMMER 2015

## Problem Set 4

1. Taken from Beth Allen's Midterm 2013.

   - State Berge's Theorem of the Maximum.
   - Consider a consumer with a consumption set $X$ given by:

   $$X = \left\{(x_1, x_2) \in \Re^2_+ : x_1 \geq 1, x_2 \geq 1\right\}.$$

   and preferences $\succeq$ represented by the utility function $u : \Re^2_+ \to \Re^2_+$ defined by

   $$u(x_1, x_2) = x_1 + 4x_2.$$

   Suppose that the endowment vector is $e = \left(\frac{1}{2}, 1\right)$. Holding the environment fixed, derive the demand correspondence $x(\cdot, e)$ for the above consumer as a function of prices.

   - Is the above demand upper hemicontinuous? Does your answer contradict the Theorem of the Maximum? Why or why not?

2. Excercises from SLP: 3.11a, 3.11b, 3.11d, 3.11g, 3.13a, 3.13b, 3.14a, 3.15, 3.16

3. Exercises from Sundaram: 9.4, 9.8, 9.15, 9.18, 9.19.