# Advanced Microeconomics

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Assignment for part 2

This assignment concerns the discrete Hotelling game. See Lesson 1 for a description of this game in case of two players (i.e. vendors). There are two exercises. Exercise 1 (2) is worth 40 (60) points.

**Exercise 1** *Suppose there are* 2 *vendors,* 5 *consumers (so* $m = 4$*) and* $w = 1/2$.

a. *Determine the game by representing it as a* $5\times5$*-bi-matrix game with at the first row strategy* 0*, the second row strategy* 1*, etc. (If You do it correctly You find in (row 1, column 2) of this matrix the payoff* $1; 15/8$*).*

b. *Determine the best reply correspondences* $R_1$ *of player* 1 *and* $R_2$ *of player* 2.

c. *Determine the Nash equilibria.*

d. *Determine the weakly and strongly Pareto efficient strategy profiles.*

**Exercise 2** *Download the Netlogo program advmicro.nlogo (see webpage or brightspace). This program allows for more than two vendors.*

*Task: try to find out, using the Netlogo program, how existence of a Nash equilibrium depends on the number of vendors (2-10), the number of consumers (2-20) and the parameter* $w$ *(*$0 < w \leq 1$*).*

*Only use the following buttons: number-of-vendors, setup, go, w, x-dimension, dimensionise-world. (Do not use the other ones.)*