Exercises # 4

Problem 1: Review the section on *Properties of Production Sets* starting on pg.130 of MWG. Draw a production set for which all of the following hold:

1. No free lunch is satisfied
2. Irreversibility is not satisfied (i.e. production is reversible) over some regions of the production process.
3. The production set is not everywhere closed, and
4. The possibility of inaction is violated.
5. The production set exhibits nondecreasing returns to scale.

Problem 2: MWG 5.B.3.

Problem 3: Consider the production function $q = f(z_1, z_2) = z_1^{0.25} z_2^{0.25}$, and let w_i and p denote factor prices and output price respectively.

a) Solve the cost minimization problem, i.e. find the conditional factor demand functions and the cost function. Be careful to list the correct arguments for each function.

b) Solve the profit maximization problem, i.e. find the output supply function, the unconditional factor demand functions, and the profit function, by means of the following 3 procedures:

- Solve the one-dimensional profit maximization, using your results from a).
- Solve the profit maximization directly, plugging in the constraint.
- Solve the profit maximization using the Lagrangean.

Problem 4: MWG 5.C.12.