ECON 3070
HW 5
Due April 7

Problem 1 *Textbook, 9.3 (second ed), 9.4 third ed.*

Problem 2 *In a soap-making industry in country Clean Land each firm can produce soap with the associated (long-run) cost*

$$TC(q) = 10q^3 - 5q^2 + 20q$$

Market demand is

$$D(P) = 39000 - 2000P$$

1. *What is the output of each firm in the long-run equilibrium?*
2. *What is the market equilibrium price?*
3. *What is the total quantity demanded?*
4. *What is the equilibrium number of firms in the long-run?*

Problem 3 *Suppose Adam and Eve are the only individuals in the economy (a small island). Adam brings 6 pheasants (x) and Eve brings 6 buckets of apples (y) to the evening fire. Their preferences are represented by the same utility function,*

$$U^E(x, y) = U^A(x, y) = x + y$$

1. *Depict the initial allocation in an Edgeworth box. Draw the indifference curves of Adam and Eve through the initial allocation.*
2. *Is the initial allocation Pareto optimal?*
3. *Describe the set of all Pareto efficient allocations, use the graph to illustrate your answer.*