*VisiCalc*, the first computer spreadsheet program, was released to the public in 1979. A year later, introduction of the DIF format made spreadsheets much more popular because they could now be imported into word processing and other software programs. By 1983, Mitch Kapor used his previous programming experience with *VisiCalc* to found Lotus Corp. and introduce the widely popular *Lotus* *1-2-3* spreadsheet program. Despite enormous initial success, *Lotus 1-2-3* stumbled when Microsoft Corp. introduced *Excel* with a much more user-friendly graphical interface in 1987. Today, *Excel* dominates the market for spreadsheet applications software, and *Lotus* represents a small part of IBM’s suite of instant messaging tools.

To illustrate the competitive process in markets dominated by few firms, assume that a two-firm duopoly (Firm A and Firm B) dominates the market for spreadsheet application software, and that the firms face a linear market demand curve

P = 1,250 – Q

where P is price and Q is total output in the market (in thousands). Thus Q = QA + QB.

For simplicity, also assume that both firms produce an identical product, have no fixed costs, and marginal costs MCA = MCB = $50.

1. Given this Cournot oligopolymarket,
2. Determine the reaction function of each firm.
3. Determine the equilibrium output level for each firm, and total market output (Qo).
4. Determine the equilibrium market price.
5. Instead of the market above being an oligopoly, it could be monopolized, perfectly competitive, or monopolistically competitive. Assume that the equilibrium market output and market price under each of the market structure are as follows:

Qo = Total market output if the market is an oligopoly

Po = Market price if the market is an oligopoly

QM = Total market output if the market is a monopoly

PM = Market price if the market is a monopoly

QPC = Total market output if the market is perfectly competitive

PPC = Market price if the market is perfectly competitive

QMC = Total market output if the market is monopolistically competition

PMC = Market price if the market is monopolistically competition

Questions:

1. Rank the market output (Qo, QM , QPC, QMC ) from the lowest to the highest.
2. Rank the market prices (Po, PM , PPC, PMC ) from the lowest to the highest.