

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Scenario 12.3:**

Suppose a stream is discovered whose water has remarkable healing powers. You decide to bottle the liquid and sell it. The market demand curve is linear and is given as follows:

$$P = 30 - Q$$

The marginal cost to produce this new drink is \$3.

- 1) Refer to Scenario 12.3. What price would this new drink sell for if it sold in a competitive market? 1) _____
 A) \$16.50 B) \$13.50 C) \$27 D) \$3 E) 0
- 2) Refer to Scenario 12.3. What is the monopoly price of this new drink? 2) _____
 A) \$16.50 B) \$3 C) 0 D) \$27 E) \$13.50
- 3) Refer to Scenario 12.3. What will be the price of this new drink in the long run if the industry is a Cournot duopoly? 3) _____
 A) \$9
 B) \$13.50
 C) \$12
 D) \$3
 E) none of the above
- 4) Refer to Scenario 12.3. What will be the price of this new drink in the long run if the industry is a Stackelberg duopoly? 4) _____
 A) \$3
 B) \$12
 C) \$9
 D) \$13.50
 E) none of the above
- 5) Refer to Scenario 12.3. What will be the price of this new drink in the long run if the industry is a Bertrand duopoly? 5) _____
 A) \$12
 B) \$9
 C) \$13.50
 D) \$3
 E) none of the above
- 6) Refer to Scenario 12.3. What will be the price of this new drink in the long run if the firms in the industry collude with one another to maximize joint profit? 6) _____
 A) \$16.50
 B) \$3
 C) \$12
 D) \$9
 E) none of the above

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

7) Hale's One Stop Gas and Auto Service competes with Murray's Gas and Service Mart. The local demand is given by: $P = 2.50 - 0.01Q$. Hale's marginal cost function is: $MC_H(q_H) = 0.35q_H$. Murray's marginal cost function is: $MC_M(q_M) = 0.30q_M$. Given the demand relationship above, Hale's marginal revenue function is: $MR_H(q_H, q_M) = 2.50 - 0.02q_H - 0.01q_M$. Determine Hale's reaction function. Murray's marginal revenue function is: $MR_M(q_M, q_H) = 2.50 - 0.02q_M - 0.01q_H$. Determine Murray's reaction function. What is the Cournot solution?

8) The Grand River Brick Corporation uses Business-to-Business internet technology to set output before Bernard's Bricks. This gives the Grand River Brick Corporation "first-move" ability. The market demand for bricks is: $Q^d = 1,000 - 100P \Leftrightarrow P = 10 - 0.01Q^d$. Bernard Brick's marginal revenue curve is: $MR_B(q_B, q_G) = 10 - 0.02q_B - 0.01q_G$. The marginal cost of producing an additional unit of bricks is constant at \$2.00 for each firm. Determine Bernard's reaction function. Given that the Grand River Brick Corporation has this information and moves first, Grand River's marginal revenue curve is: $MR_G(q_G) = 6 - 0.01q_G$. Calculate Grand River Brick Corporation's optimal output level. Does the "first-move" ability of the Grand River Brick Corporation allow them to capture a larger market share (note that the marginal revenue curves would be symmetric if Grand River did not have first-move ability)?

9) Quasar Corporation is set to release its latest video game system which utilizes the newest game technology. In fact, the release date is sooner than that of its only rival Orion. This gives Quasar Corporation "first-move" ability. The demand for video game systems is: $Q^d = 150 - 0.1P \Leftrightarrow P = 1,500 - 10Q^d$. Orion's marginal revenue curve is: $MR_O(q_O, q_Q) = 1,500 - 20q_O - 10q_Q$. The marginal cost functions are: $MC_Q(q_Q) = 0.5q_Q$, $MC_O(q_O) = 0.5q_O$. Determine Orion's reaction function. Given that Quasar Corporation has this information and moves first, Quasar's marginal revenue function is: $MR_Q(q_Q) = \frac{31,500}{41} - \left(\frac{420}{41}\right)q_Q$. Calculate Quasar Corporation's optimal output level. Does the "first-move" ability of Quasar Corporation allow it to capture a larger market share?

10) Hale's One Stop and Auto Service competes with Murray's Gas Mart. The local demand is: $Q^d = 25 - 10P \Leftrightarrow P = 2.50 - 0.1Q^d$. Both firms sell exactly the same quality of gasoline. Thus, if the firms charge a different price, the lower price firm will capture the entire market share. If the firms charge the same price, they will split the market share. The marginal cost functions are both constant at \$1.25. If the firms compete by setting price, what is the market output level? What is the market price level?

11) On the planet Economus, the demand for Kryptonite is:

$$Q^D = 24.08 - 0.06P \Leftrightarrow P = 401\frac{1}{3} - 16\frac{2}{3}Q^D$$

There are four producers of Kryptonite on the planet who have

formed a Kryptonite Cartel. The resulting marginal revenue function for the cartel is:

$$MR(Q) = 401\frac{1}{3} - 33\frac{1}{3}Q$$

The marginal costs for producing Kryptonite for the 4 different producers are:

$$\begin{aligned} MC_1(q_1) &= q_1, \\ MC_2(q_2) &= 1.5q_2, \\ MC_3(q_3) &= 2q_3, \\ MC_4(q_4) &= 2.5q_4. \end{aligned}$$

Determine the Cartel profit maximization output levels of each producer. If producer #2 cheats and produces 50% more than their collusive output level, determine their new revenue level.