Youngberg

Econ 301—Bethany College

**Homework 07**

Answer all the following on a ***typed, stapled*** (if applicable)separate sheet of paper. You do not need to type equations and graphs. I charge 25 cents to staple your homework. Make sure that you justify your answers, use your own words, and show your work. All questions are equally weighted.

1. Present an example of a perfectly competitive market. Justify your answer using at least three assumptions of perfect competition.

*The market for live Christmas trees is an example of perfection competition. There are thousands of suppliers (about 12,000, actually) and millions of buyers. The goods are homogenous—though trees may vary in small ways, they are all basically the same—and information is perfect—consumers and suppliers face no mysteries about the product and it is easy to gather information about the product in case there is.*

1. Illustrate on the diagram below how many pounds of candy this firm should produce, and where it has a profit or loss indicate. Calculate the amount of profit or loss the firm is experiencing. Remember to show your work.

2

4

6

8

10

12

14

16

18

20

2

10

8

6

4

22

20

18

16

14

12

22

P ($/lb)

Candy (millions of pounds)

**ATC**

**P**

**MC**

*The profit is 9 million times $2, or $18 million.*

1. Suppose the total cost function of a firm is TC = 30 + Q3 and the total revenue function is 10Q. Find the profit maximizing quantity and the amount of profit or loss the firm is making. Remember to show all your work.

*MC = 3Q2*

*MR = 10*

*3Q2 = 10*

*Q2 =10/3*

*Q = (10/3)0.5*

*ATC = (30 + ((10/3)0.5)3) / (10/3)0.5= 19.7650*

*∏ = (10 – 19.7650) (10/3)0.5 = -17.8284*

1. Using the information from Question 3, determine the price and quantity that will result in zero economic profit. Remember to show all your work.

*Recall that ATC = MC for this to hold true so…*

*3Q2 = (30 + Q3)/Q*

*3Q3 = 30 + Q3*

*2Q3 = 30*

*Q = (15)1/3*

*And put this into the MC function since MC = P…*

*P = 3(15)2/3 = 18.2466*

1. Suppose half of the fixed cost in the total cost function in Question 3 is actually a sunk cost. Should the firm shut down in the short run? What price is their short-run shut down price?

*Now the cost function is TC = 15 + Q3 with a MR = 10 and MC = 3Q2*

*Q = (10/3)0.5 remains the same.*

*ATC = (15 + ((10/3)0.5)3) / (10/3)0.5= 11.5492*

*∏ = (10 – 11.5492) (10/3)0.5 = -2.8284*

*Yes, it should shut down in the short-run; it is making a negative economic profit.*

*For the short-run shut down price:*

*(15 + Q3)/Q = 3Q2*

*15 + Q3 = 3Q3*

*(15/2)1/3 = Q*

*P = 3(7.5)2/3 = 11.4946*