**Solutions to the demand analysis problems**

1. (a) Q=2840-20P ⇨ P=142-0.05Q which is the inverse demand curve.

TR=PQ=(142-0.05Q)Q=142Q-0.05Q2

(b) Q=1600 ⇨ P=142-0.05(1600)=62

Since ⇨ inelastic demand

(c) To find the level of output for which total revenue is maximized we need to set MR=0.

MR=0 ⇨ 142-0.1Q=0 ⇨ Q=1420

At Q=1420: TR=(142)(1420)-0.05(1420)2=100820

2. (a) Substitute the values for the given independent variables into the demand function to obtain the following demand curve:

Q=1228-20P

(b) As PY increases QX decreases implying the two goods are complements.

(c) P=50 ⇨ Q=1228-20(50)=228

Since ⇨ elastic demand

(d) To find the level of output for which total revenue is maximized we need to set MR=0. In order to find the MR we need first to get the inverse demand curve, then the TR, and then the MR.

Q=1228-20P ⇨ P=61.4-0.05Q which is the inverse demand curve

TR=PQ=(61.4-0.05Q)Q=61.4Q-0.05Q2

Set MR=0 ⇨ 61.4-0.1Q=0 ⇨ Q=614

P=61.4-0.05Q=61.4-0.05(614)=30.7

TR=PQ=(30.7)(614)=18849.8

1. Based on this information, the own price elasticity of demand for Big G cereal is . Thus, demand for Big G cereal is elastic (since this number is greater than one in absolute value). Since Lucky Charms is one particular brand of cereal for which even more substitutes exist, you would expect the demand for Lucky Charms to be even more elastic than the demand for Big G cereal. Thus, since the demand for Lucky Charms is elastic, one would predict that the increase in price of Lucky Charms resulted in a reduction in revenues on sales of Lucky Charms.
2. Using the cross price elasticity formula, . Solving, we see that the price of Food would have to decrease by 10 percent in order to increase the consumption of Entertainment by 50 percent.