Name:
Panther ID:

## Homework \#2 (Due Oct 30, 2017)

## Note: All homework must be submitted in hard copy (no email submissions accepted). No late homework will be received.

1. Use the graph that illustrates supply and demand for education to answer the following questions.
a. Label the equilibrium price and quantity (if there are no externalities in this market). Education received by one person also benefits that person's family. Given this scenario, label the socially optimal level of price and quantity.
b. Suggest a government action that could make potential students take into account the positive externality
2. Suppose the governor of California has proposed increasing toll rates on California's toll roads, and has presented one possible scenario to implement these increases. Following are projected data for the California toll roads:

Case one: Toll rate in 2015: $\$ 10.00$. Toll rate in 2019: $\$ 17.50$
For every 100 cars using the toll roads in 2015, only 96.2 cars will use the toll roads in 2019.
a. Calculate the price elasticity of demand for case one. Is it price elastic, inelastic, or unit elastic.
b. Assume 10,000 cars use California toll roads every day in 2015 . What would be the daily total revenue received for case one in 2015 and in 2019?
3. Explain the relationship between price elasticity of demand and total revenue.
4. Suppose that at a price of $\$ 55,100$ units were sold while at a price of $\$ 33,153$ units were sold. Without calculating the price elasticity value, can you determine whether demand is elastic, unit elastic, or inelastic? Explain your answer.
5. Lilly Davis has $\$ 10$ per week to spend on any combination of ice cream and candy. The price of an ice cream cone is $\$ 2$ and the price of a candy bar is $\$ 1$. The table below shows Lilly's utility values. Use the table to answer the questions that follow the table.

| Quantity of <br> Ice Cream <br> Cones | Total <br> Utility | Marginal <br> Utility | Marginal <br> Utility per <br> Dollar | Quantity of <br> Candy | Total <br> Utility | Marginal <br> Utility | Marginal <br> Utility per <br> Dollar |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 | 0 |  |  | 0 | 0 |  |  |
| 1 | 20 |  |  | 1 | 20 |  |  |
| 2 | 36 |  |  | 2 | 35 |  |  |
| 3 | 46 |  |  | 3 | 45 |  |  |
| 4 | 52 |  |  | 4 | 50 |  |  |
| 5 | 54 |  |  | 5 | 53 |  |  |

a. Complete the table by filling in the blank spaces.
b. Find the optimal consumption combination. Explain briefly.
6. The table shows bundles Mia can buy with $\$ 10$, if pizza costs $\$ 2$ per slice and Coke costs $\$ 1$ per can.

| Slices of Pizza | Cans of Coke | Total spending |
| :---: | :---: | :---: |
| 0 | 10 | $\$ 10$ |
| 1 | 8 | $\$ 10$ |
| 2 | 6 | $\$ 10$ |
| 3 | 4 | $\$ 10$ |
| 4 | 2 | $\$ 10$ |
| 5 | 0 | $\$ 10$ |

(a) Use the graph that illustrates the budget line for the above table.
(b) If the price of pizza falls to $\$ 1$ per slice but the price of Coke per can remains the same, how the budget line moves? Show it.
(c) If the price of pizza falls to $\$ 1$ per slice and the price of Coke falls to $\$ 0.5$ per can, how the budget line moves? Show it.
(d) Explain the income effect and substitution effect.

