Youngberg

Econ 301—Bethany College

**Homework 03**

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. Consider two goods: Toys (on the x-axis) and Food (on the y-axis). Below are several marginal rates of substitution when there is an additional amount of Toys or Food. For each set of information, indicate how many units of Toys or Food the consumer would gain or lose to remain indifferent.
	1. MRS: 1.00; ΔToys: +3
	2. MRS: 4.00; ΔFood: +1
	3. MRS: 2.00; ΔToys: -2
	4. MRS: 0.25; ΔFood: +1
	5. MRS: 0.50; ΔToys: -0.50
2. *Change in Food: -3*
3. *Change in Toys: -0.25*
4. *Change in Food: +4*
5. *Change in Toys: -4*
6. *Change in Food: +0.25*
7. The utility-maximizing bundle of goods is found at the point of tangency between the budget constraint and an indifference curve. In the diagram below, the utility-maximizing bundle is the one labeled point *K*. There are two different, but equally important, ways to interpret this point.

**B**

**K**

**C**

**A**

**D**

* 1. Of the points A, B, and K, what is special about K that makes it the point of consumption?
	2. Of the points C, D, and K, what is special about K that makes it the point of consumption?
1. *While A, B, and K are all within budget, K lies on the indifference curve with the most utility.*
2. *While the consumer is indifference between C, D, and K, K is the only point on that curve that is affordable. All other points are beyond the consumer’s budget.*
3. Use the following information to construct budget constraints (use the form where the quantity along the y-axis, or $Q\_{Y}=\frac{I}{P\_{Y}}-\frac{P\_{X}}{P\_{Y}}Q\_{X}$)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Income** | **Price of X-axis good** | **Price of Y-axis good** |
| a) | $100 | $5 | $10 |
| b) | $100 | $5 | $2 |
| c) | $100 | $8 | $10 |
| d) | $500 | $5 | $10 |
| e) | $500 | $25 | $50 |

* 1. *QY = 10 – 0.5QX*
	2. *QY = 50 – 2.5QX*
	3. *QY = 10 – 0.8QX*
	4. *QY = 50 – 0.5QX*
	5. *QY = 10 – 0.5QX*
1. Ten-year-old Sandy Sweets loves eating candy far more than carrots. Her indifference curves are indicated on the following indifference map. Suppose carrots cost $4 a pound and candy cost $2 a pound. Also suppose that Sandy has $16 a month for both candy and carrots. (You may want to print out this diagram and turn in a copy altered by hand.)
	1. Sketch her budget constraint and indicate how many pounds of carrots and pounds of candy Sandy eats.
	2. Illustrate the effects of if Sandy’s parents increase Sandy’s monthly budget by $32, but this money can ***only*** be spent on carrots. How many pounds of carrots and candy does Sandy now buy? (HINT: It should be a corner solution.)
	3. How many pounds of carrots and candy would Sandy buy if she could spend this additional income however she wanted?

Carrots (lbs/

months)

2

4

6

8

10

12

14

16

20

2

4

6

8

12

10

18

16

14

20

Candy (lbs/months)

18

1. *Sandy eats six pounds of candy and one pound of carrots.*
2. *With this money earmarked for carrots, she eats eight pounds of candy and eight pounds of carrots.*
3. *If it wasn’t earmarked, we’d use the dotted line to determine that she’d eat twelve pounds of candy and six pounds of carrots. (Interestingly, her carrot-to-candy ratio has improved. Instead of one pound of carrots for every six pounds of candy, she eats one pound of carrots for every two pounds of candy.)*
4. Using three different prices of jelly (and keeping the price of peanut butter constant), sketch three budget constraints, each with a corresponding indifference curves. Put peanut butter on the y-axis and jelly on the x-axis. Indicate the points of consumption and draw a price-consumption curve. Finally, indicate which parts (if any) are peanut butter and jelly complements and which parts (if any) are peanut butter and jelly substitutes. Note there are many possible correct answers to this question—it all depends on how the indifference curves are drawn.

*As the question indicates, there are many correct answers to this question. The key lies in interpreting your results correctly. Also, since the price of peanut butter doesn’t change, and income doesn’t change, the y-intercept should be constant.*

*In the diagram below, the goods are substitutes as long as you’re buying less than five jellies and complements as long as you’re buying more than five jellies.*

Jelly

2

4

6

8

10

12

2

4

6

8

12

10

Peanut Butter

**Complements**

**Substitutes**