Brenda likes hot dogs and Coca-Cola. Hot dogs cost \$1 each and Cokes cost \$.50 per bottle. There is a special promotion for Coke that will last for one month. If Brenda sends in the bottle tops from the Cokes she drinks during the next month, she will get a refund of \$.20 for every bottlecap beyond the first 12 that she returns. For example, if she returns 25 bottle caps she will get back \$2.60 = \$.20(25 - 12). Brenda has \$40 to spend on hot dogs and Coke during the next month. Draw her budget line with Coke on the horizontal axis and hot dogs on the vertical axis. Find the points where the budget line hits the axes and the point where it has a kink. At each of these three points write down the quantities of each good consumed.

ANS:

The budget line runs from (0, 40) on the vertical axis to a kink point (12, 34) and from (12, 34) to about (125.3, 0).

2) Belinda loves chocolate and always thinks that more is better than less. Belinda thinks that a few piano lessons would be worse than none at all, but if she had enough piano lessons to get good at playing the piano, she would prefer more lessons to less. Draw a graph with piano lessons on the horizontal axis and chocolate on the vertical axis. On your graph sketch two indifference curves for Belinda that would be consistent with this story. Label the better of the two indifference curves *AA* and the worse one *BB*.

ANS:

The indifference curves would look something like inverted U's. (The area under these curves needn't be necessarily convex.) The better of the two curves drawn is the higher one.

- 3) If good *X* is measured on the horizontal axis and good *Y* on the vertical, what can you say about the preferences of someone whose indifference curves are
 - a. parallel to the *Y* axis?
 - b. positively sloped with more desirable indifference curves as one moves to the right?
 - c. negatively sloped with more desirable indifference curves as one moves to the left?

ANS:

- a. This person doesn't care how much *X* he has.
- b. This person likes *X* but hates *Y*.
- c. This person hates both goods.
- 4) Use separate graphs to sketch two indifference curves for people with each of the following utility functions:

a. U(x, y) = x + 2y.

- b. $U(x, y) = min\{x, 2y\}.$
- c. $U(x, y) = max\{x, 2y\}.$

ANS:

a. These are straight lines with slope 1/2.

b. These are L-shaped. The corners lie along the locus x = 2y.

c. A typical indifference curve consists of a horizontal line from the *y* axis to the locus x = 2y and then a

vertical line to the *y* axis from the point where the horizontal line met the line x = 2y.

5) Ambrose has the utility function $U(x_1, x_2) = 4x^{1/2} + x_2$. If Ambrose is initially consuming 64 units of nuts (x₁) and 10 units of berries (x₂), then what is the largest number of berries that he would be willing to give up in return for an additional 17 units of nuts?

ANS: 4

Her initial utility level= $4*64^{0.5} + 10 = 42$

If she gets 17 extra units of nuts then Nuts=81, for Ambrose to be indifferent her utility level after exchange needs to be equal to the initial level (i.e. 42) ->

 $42=4*81^{0.5} + x2 \rightarrow x2=6 \rightarrow so$ she would be willing to give up maximum 4 units.