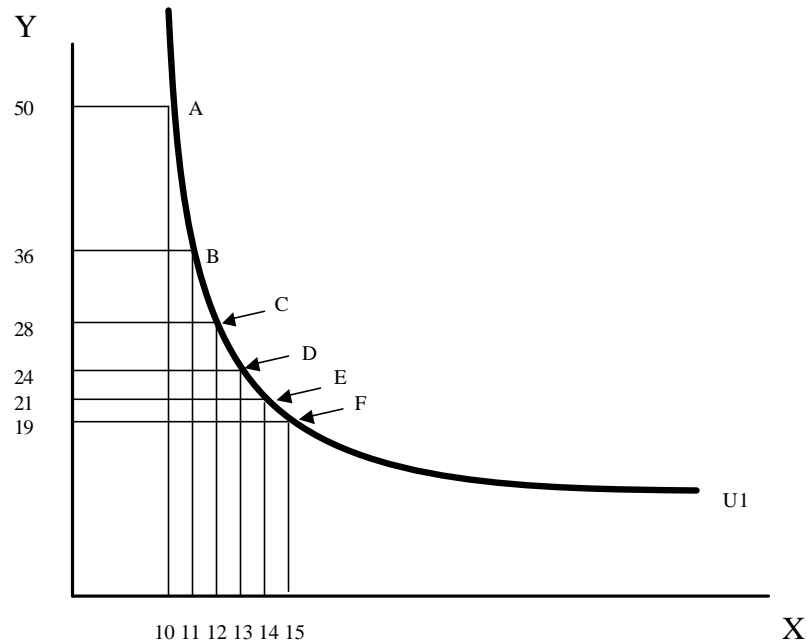


Consumer Tastes and Preferences



1. What is the marginal value (MRS) of the 11th, 12th 13th and 14th unit of the good on the X axis?

*11th: 14
12th: 8
13th: 4
14th: 3*

2. In words, what do these MRS numbers mean?

They tell us the amount of Y that this person is willing to give up in order to get an additional unit of X while remaining indifferent.

3. If this person is at bundle B and someone offers them one more unit of X in exchange for 10 units of Y, will this person take the offer? Please explain.

No they won't. At bundle B, they are willing to give up 8 Y for one more X. 10 is too high a price.

4. If this person is at bundle B and someone offers them one more unit of X in exchange for 4 units of Y, will this person take the offer? Please explain.

Yes, because they are willing to give up 8 Y for one X, 4 is therefore a bargain.

5. If this person is at bundle D and someone offers them one more unit of X in exchange for 5 units of Y, will this person take the offer? Please explain.

No, they will not take the offer. At "D" they will be indifferent if they give up 3 Y and get one X, giving up 5 would make them worse off.

6. If this person is at bundle D and someone offers them one more unit of X in exchange for 1 units of Y, will this person take the offer? Please explain.

Yes, they will take the offer. They would be indifferent if they gave up 3 Y for 1 X. Only giving up 1 Y for 1 X would make them better off.

7. MRS is the change in Y that keeps utility the same (same level of indifference) when the amount of X in the bundle increases by one. So far, the change in X has been restricted to one unit. However, we can get the MRS when the change in X is something other than one if we use the following equation: $MRS = \Delta Y / \Delta X$. So, if the bundle changes from B to E, what is the MRS?

$15/3 = 5$.

8. Say we want to figure out the MRS when we are at bundle B. Although MRS calculated when the bundle changes from B to E is valid, it is not nearly as precise a measure as calculating the MRS when moving from bundle B to C. What if we go the other way and calculate the MRS from changing from bundle B to B' where B' is a bundle containing X = 10.1 and Y = 34.8? What is the MRS between B and B'?

$1.2/.1 = 12$

As the change in X gets smaller and smaller (approaching zero), the MRS we calculate will approach the slope of the indifference curve *at* bundle B.

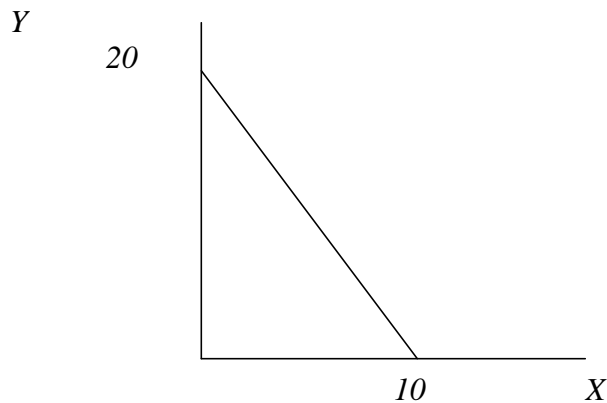
9. Why, as the bundles contain more X (along the indifference curve) does the MRS decrease?

Because as you consume more of a good, you are willing to give up less to get more of the good. This is the convexity assumption.

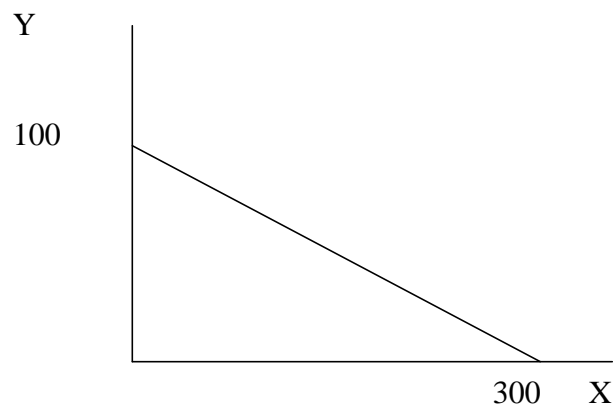
The Budget Line

Preferences are about our desires. The budget line is about scarcity and how much we can afford.

10. Say your income is \$100 and the price of X is \$10 and the price of Y is \$5. Plot your consumption opportunities on a graph. To make it easier, plot the points for the bundles corresponding to X = the whole numbers from 1 – 10.



11. What is the budget line equation if your income is \$300, the price of good X is \$1 and the price of good Y is \$3? (yes, we are assuming that you only buy two goods).



12. Graph this equation (it is much easier if you do the high school algebra thing and get Y alone on one side of the “=” sign). What is the slope of the line?

$$\text{slope} = -1/3$$

$$Y = 100 - 1/3X$$

13. What is the budget line equation if income = 300, $P_x = 2$ and $P_y = 3$? Graph it on the graph for #12 above. What is its slope?

$$Y = 100 - 2/3X \quad \text{slope} = -2/3$$

14. What is the budget line equation if income = 200, $P_x = 1$ and $P_y = 3$? Graph it on the graph for #12 above. What is its slope?

$$Y = 66.66 - 1/3X$$

$$\text{Slope} = -1/3$$

Complete the following sentences:

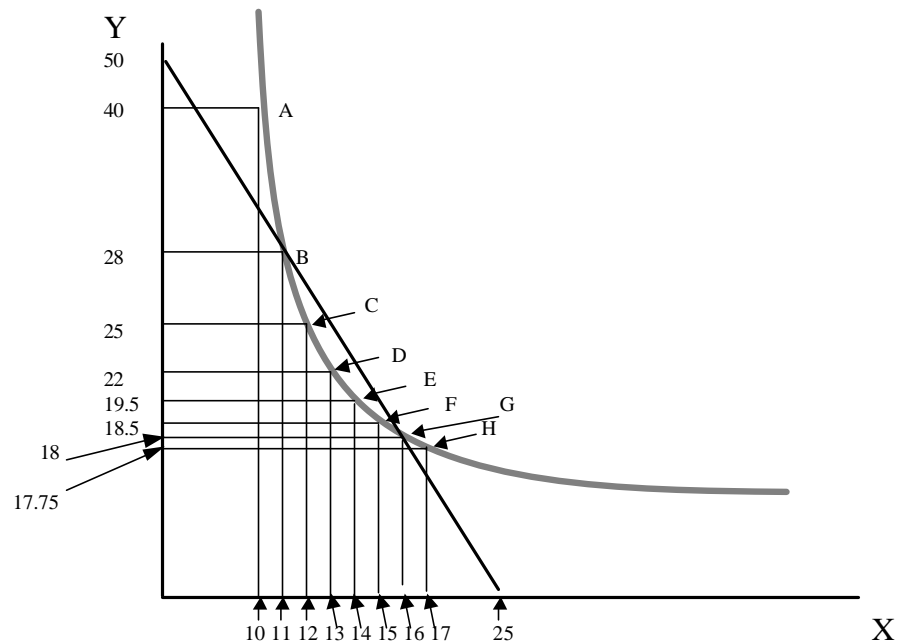
The slope of a budget line (or budget constraint) is $\frac{P_x/P_y}{(P_x/P_y \text{ or } P_y/P_x)}$

The slope of the budget line tells us the amount of $\frac{Y}{(X \text{ or } Y)}$ we have to give up if

we want to be able to consume one more unit of $\frac{X}{(X \text{ or } Y)}$.

Consumer Choice

For the following questions, your income is \$50, the price of Y is \$1 and the price of X is \$2.



I have drawn in the budget constraint and it runs through bundles B and G.

14. Say you are at bundle B and you have access to a market where you can trade what you have to get more X or Y. Given the prices noted at the top of the page, if you decided to consume one more unit of X, how much Y do you have to forgo consuming? (Hint, so if you started off buying 50 units of Y and zero X, you could get one more X by giving up 2 Y?)

15. What is the marginal value (i.e. MRS) of the 12th unit of X you consume? In other words, at bundle B, how much Y would you be willing to give up to get one more X (and still have the same utility)?

3

16.

From #14 above: To consume the 12th unit of X, I have to give up 2 units of Y.

From #15 above: To consume the 12th unit of X, I am willing to give up 3 units of Y.

So, should you trade off some Y in the market and buy one more X instead?

Yes

If you make this trade-off, will you stay on the same indifference curve, move to a higher one, or move to one with less utility?

more utility

17. Say you are at bundle G. To get one more unit of X, how much Y do you have to forgo consuming?

2

18. What is the marginal value (i.e. MRS) of the 17th unit of X you consume? In other words, at bundle G, how much Y would you be willing to give up to get one more X (and still have the same utility)?

.25

19.

From #17: To consume the 17th unit of X, I have to give up 2 units of Y.

From #18: To consume the 17th unit of X, I am willing to give up .25 units of Y.

So, should you trade off some Y in the market and buy one more X instead?

No.

If you make this trade-off, will you stay on the same indifference curve, move to a higher one, or move to one with less utility?

Less utility

20. Again starting at bundle G (but going the other way). To get .5 more unit of Y, how much X do you have to forgo consuming?

.25 X

The price of X is \$2 and the price of Y is \$1. To get .5 Y, costs \$.50, with which you can buy .25 units of X.

21. Starting at bundle G, How much X are you willing to give up to get the extra .5 units of Y?

One unit of X.

22.

From #20 above: To consume the extra .5 unit of Y, I have to give up .25 units of X.

From #21 above: To consume the extra .5 unit of X, I am willing to give up 1 unit of X.

So, should you trade off some X in the market and buy .5 more X instead?

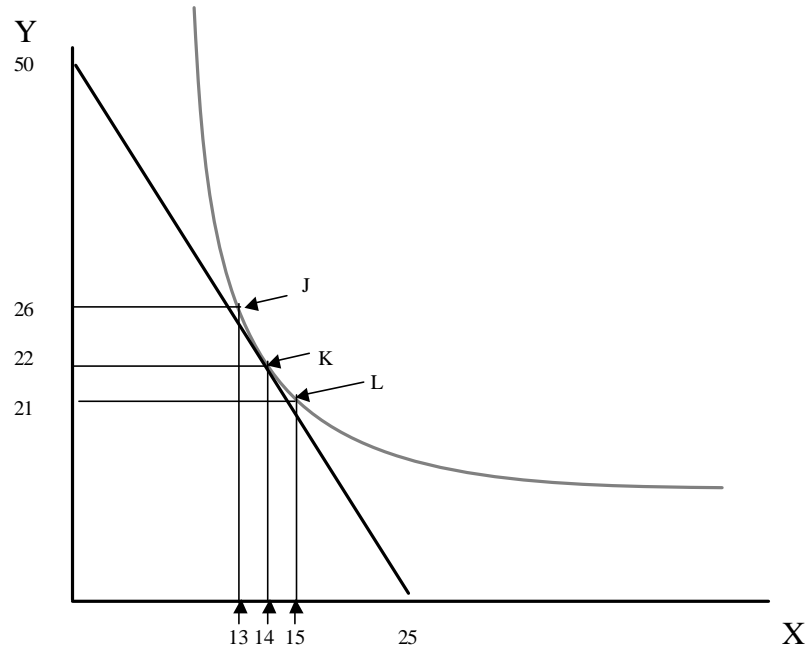
Yes.

If you make this trade-off, will you stay on the same indifference curve, move to a higher one, or move to one with less utility?

More utility

Again, assume income is \$50, the price of X = \$2 and the price of Y is \$1.

Starting at bundle X, to move to bundle Y requires



Here we start at bundle K where the indifference curve and the budget line (i.e. constraint) are tangent. To get an extra unit of X, we have to give up 2 units of Y. And we are willing to give up 1 units of Y. Does trading off the Y in order to get one more unit of X make us better off? *No*.

Again start at bundle K. If we give up one unit of X, we would need 4 units of Y so that we are as well off as before? If we give up one unit of X, we could then buy 2 extra units of Y. Does trading off the unit of X in order to get more Y make us better off? *No*.

Hopefully you can see that as long as the slope of the budget constraint and indifference curve are the same, there is always a way to jump to a new bundle and be better off. However, if you are at a bundle where the budget constraint and indifference curve are tangent, there is no way to make yourself better off by moving to a new bundle.