Chapter 21 & 13 Practice Problems

Elements of Microeconomics (discussion section 4)

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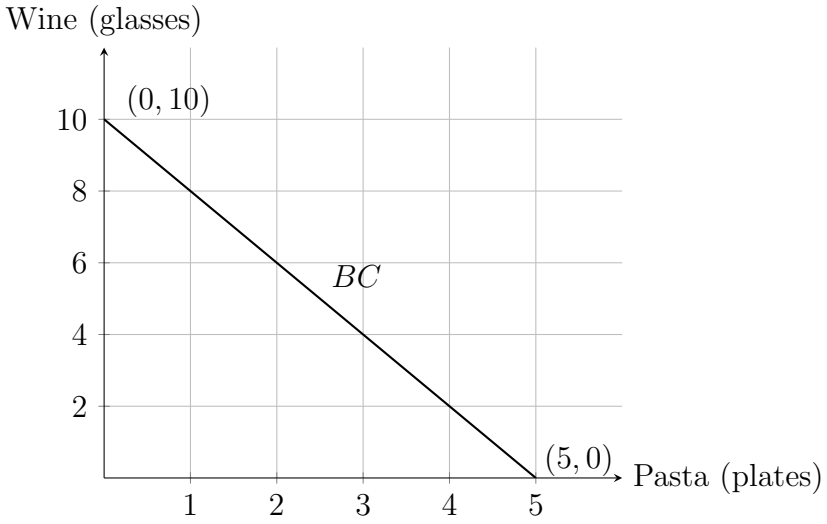
Question 1

A consumer would like to purchase pasta and wine. They have \$100 to spend, pasta costs \$20 per plate and wine costs \$10 per glass.

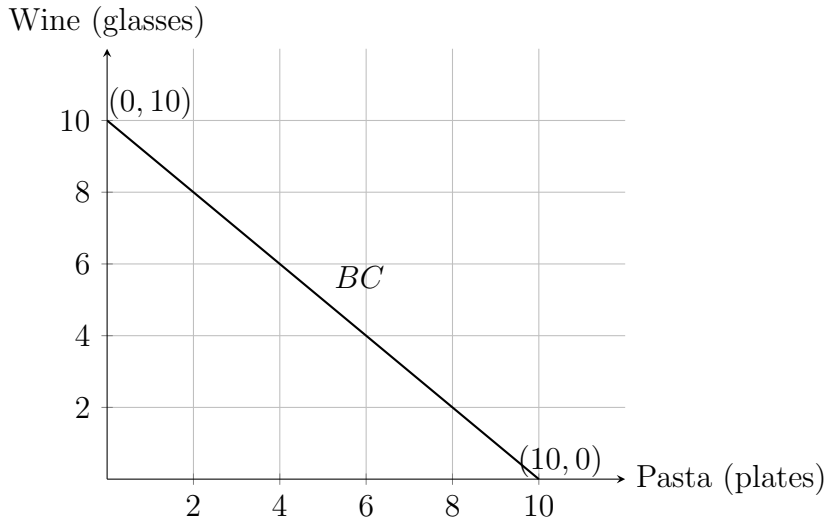
1. How much of each good could they possibly consume?
2. What is the equation for their budget constraint?
3. What does their budget constraint look like graphically?
4. What happens if the price of pasta decreases to \$10?
5. What happens if income increases to \$160?

Answer:

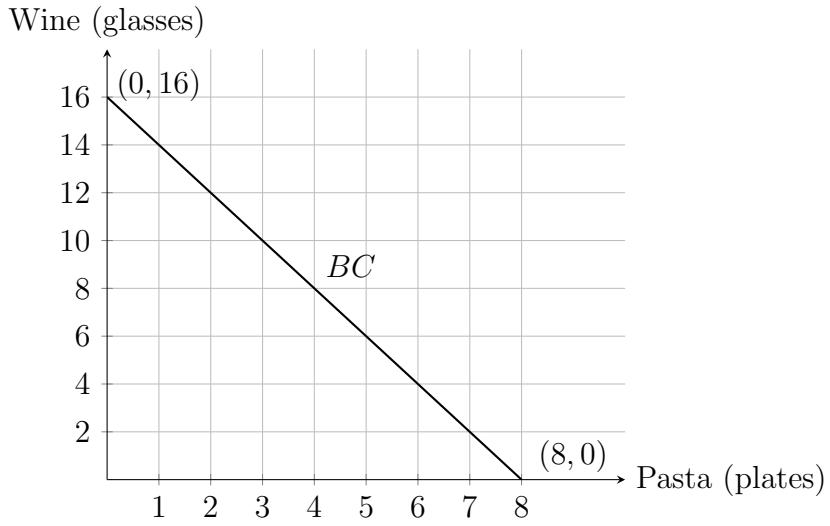
1. They could consume a maximum of 5 plates of pasta (and 0 glasses of wine) or 10 glasses of wine (and 0 plates of pasta)
2. Budget constraint:
$$100 = 20P + 10W$$
Where P is number of pasta plates and W is number of glasses of wine.
3. Graph of budget constraint:



4. Now they can consume a maximum of 10 plates of pasta or 10 glasses of wine. Their new budget constraint is $100 = 10P + 10W$ and this graphically represented as follows:



5. Now (assuming the original prices) they can consume a maximum of 8 plates of pasta or 16 glasses of wine. The new budget constraint is $160 = 20P + 10W$. This is represented graphically as follows:



Question 2

Using the set up from question 1:

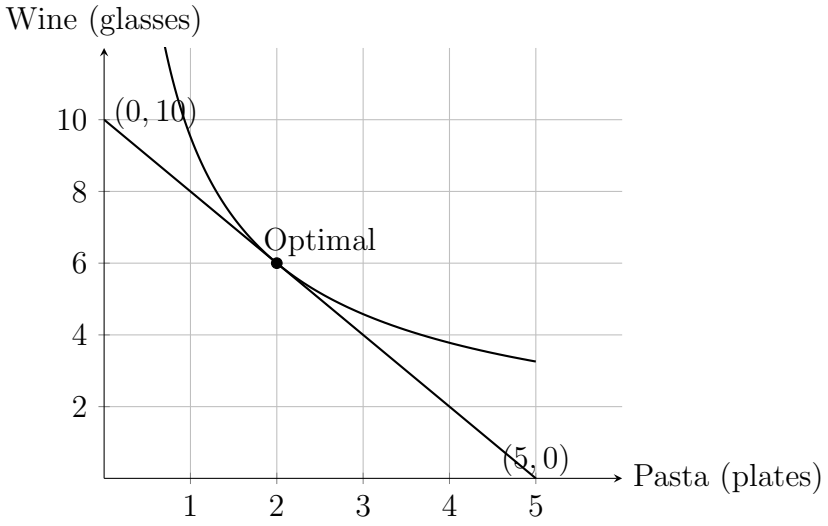
1. Draw the indifference curve which represents the maximum satisfaction the consumer could possibly have given their initial budget constraint.

2. Now consider the increase in income to \$160. Draw the new indifference curve which represents the maximum satisfaction the consumer could possibly have given this budget constraint.

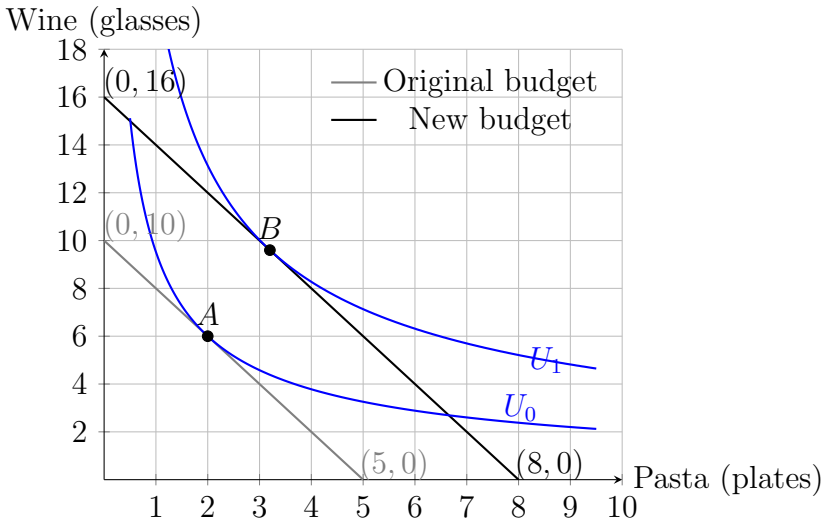
3. Now consider the decrease in price of pasta to \$10. Draw the new indifference curve which represents the maximum satisfaction the consumer could possibly have given this budget constraint AND illustrate the income and substitution effects as a result of the change.

Answer:

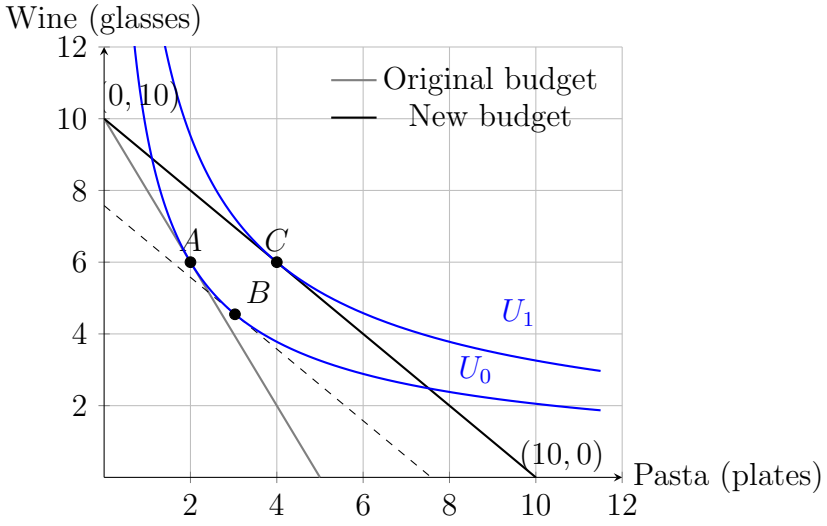
1. Graph with indifference curve:



2. Now with the increased income:



3. Now with decreased pasta price... Movement from A to B is the substitution effect, movement from B to C is the income effect:



Question 3

Consider a firm which produces pizzas. The following table shows the number of pizzas produced given varying numbers of workers:

Workers	Output
0	0
1	20
2	45
3	80
4	100
5	110

A worker costs $100 and the firm has fixed costs of $200. Add columns for the fixed cost, variable cost, total cost, average total cost, and marginal cost and fill them in.

Answer:

Workers	Output	Fixed Cost	Variable Cost	Total Cost	ATC	Marginal Cost
0	0	200	0	200	-	-
1	20	200	100	300	15	5
2	45	200	200	400	8.9	4
3	80	200	300	500	6.25	2.86
4	100	200	400	600	6	5
5	110	200	500	700	6.36	10

And a corresponding graph to illustrate the relationship between MC and ATC: