Recitation #7 – Week 03/01/2009 to 03/07/2009

Chapter 10 – The Rational Consumer

Exercise 1.

The following table provides information about Carolyn's total utility from reading articles about current events.

Number of articles read	Total utility from reading articles (utils)
1	100
2	300
3	450
4	550
5	625
6	680
7	720
8	740

a. Using the above information, complete the following table.

Number of articles read	Marginal utility from reading articles (utils)
1	
	200
2	
	150
3	
4	
5	
6	
7	
8	

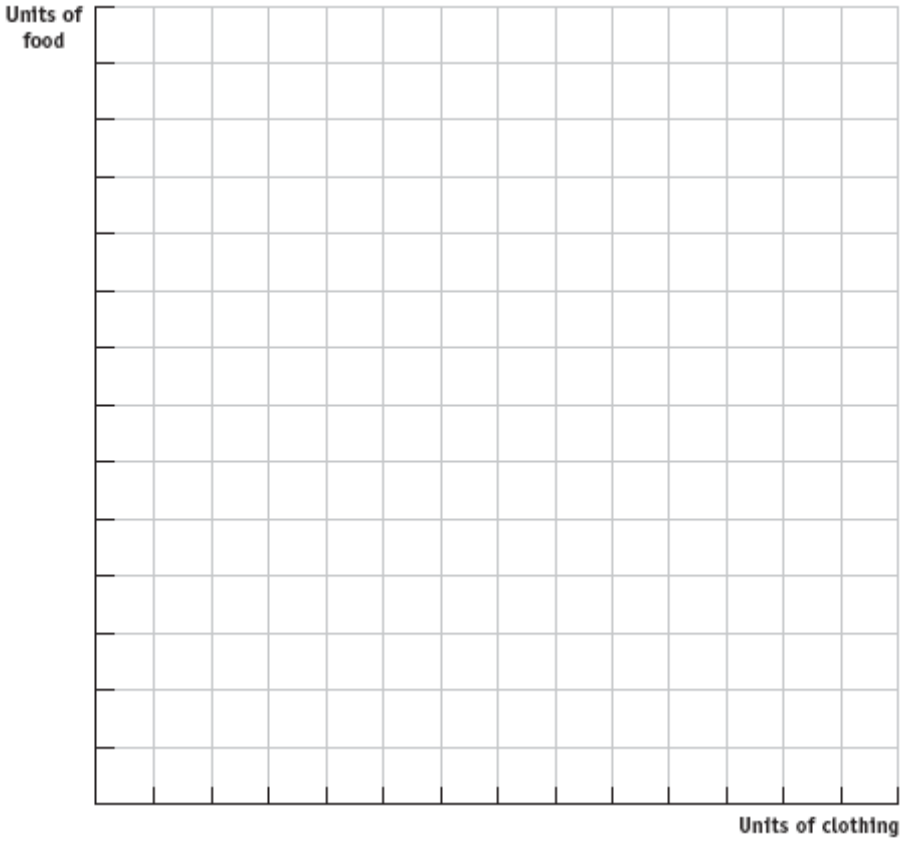
b. Does Carolyn experience diminishing marginal utility when reading articles? Explain your answer. If she experiences diminishing marginal utility, identify when this first occurs.

c. Is it possible for Carolyn to read too many articles? Explain your answer.

Exercise 2

Katherine's available income each week for expenditures on food (*F*) and clothing (*C*) is $40. The price of each unit of food is $2 and the price of each unit of clothing is $10.

a. Draw a graph of Katherine's budget line in which food is measured on the *y*-axis and clothing is measured on the *x*-axis.

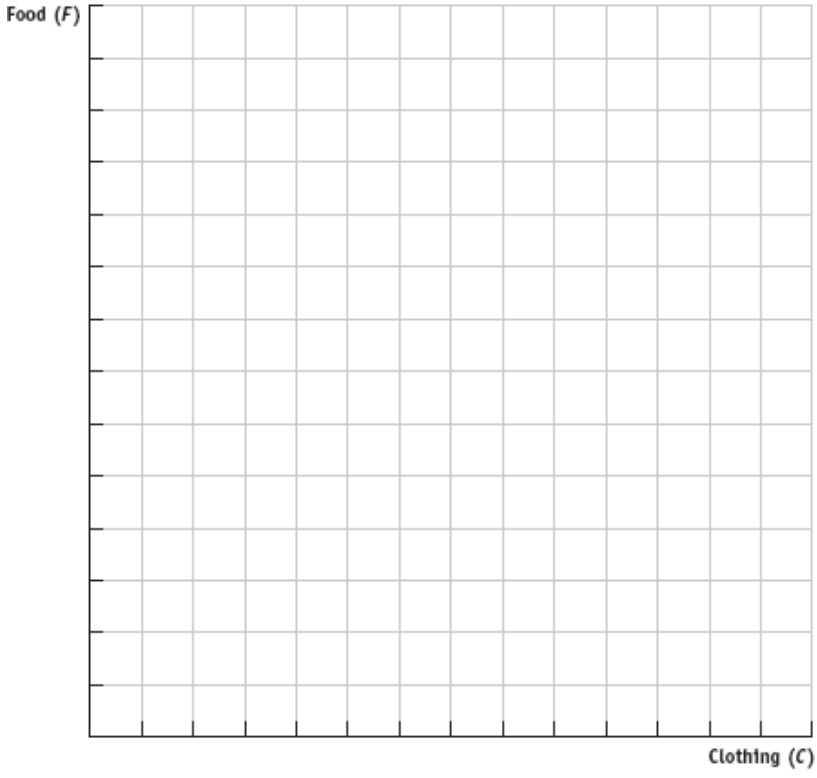


b. For each of the consumption bundles in the table below, identify whether the bundle is on Katherine's budget line, inside Katherine's budget line, or beyond Katherine's budget line

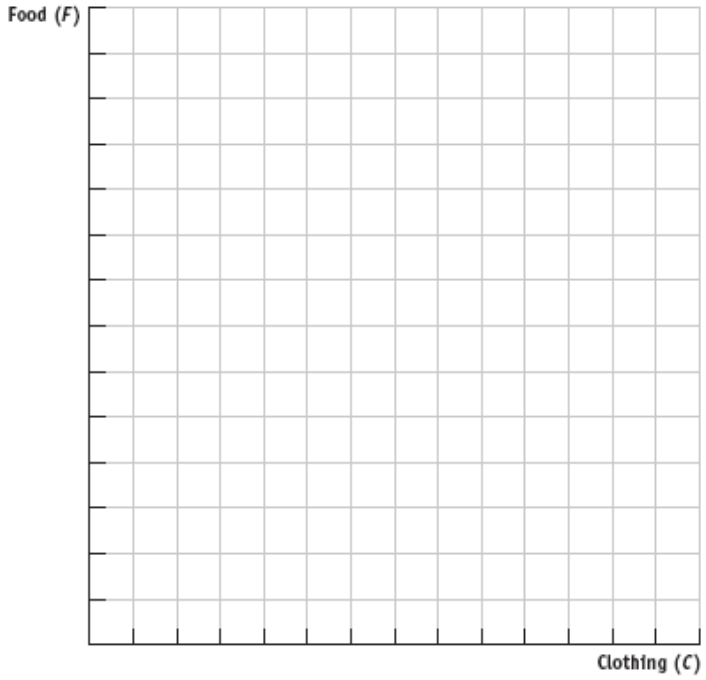
Consumption bundle	On, inside, or beyond the budget line
5 units of food, 3 units of clothing	
4 units of food, 4 units of clothing	
10 units of food, 1 unit of clothing	
20 units of food, 2 units of clothing	

c. Write an equation in *y*-intercept form for Katherine's budget line in which food is the *y*-variable.

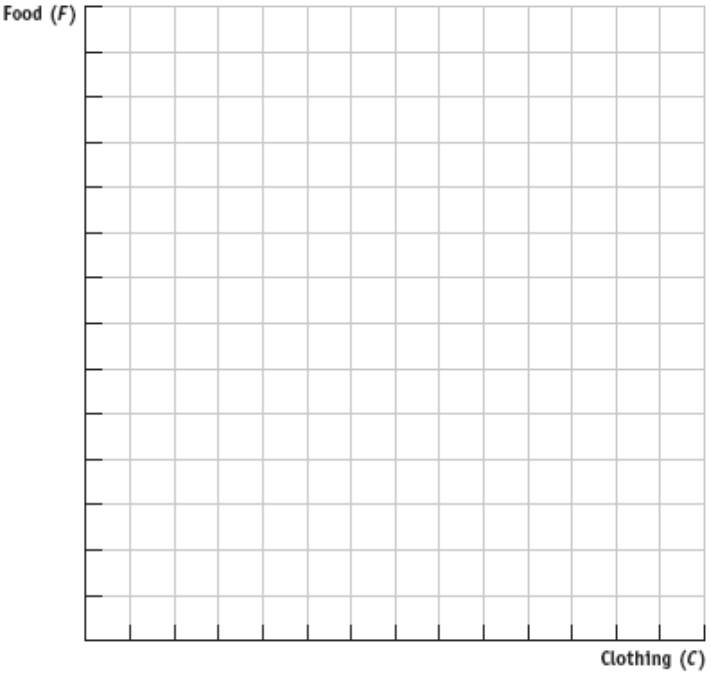
d. Suppose prices stay constant, but Katherine's available weekly income for expenditures on food and clothing doubles. Draw a graph of Katherine's initial budget line and her new budget line with food measured on the vertical axis. How does the new budget line compare to her initial budget line?



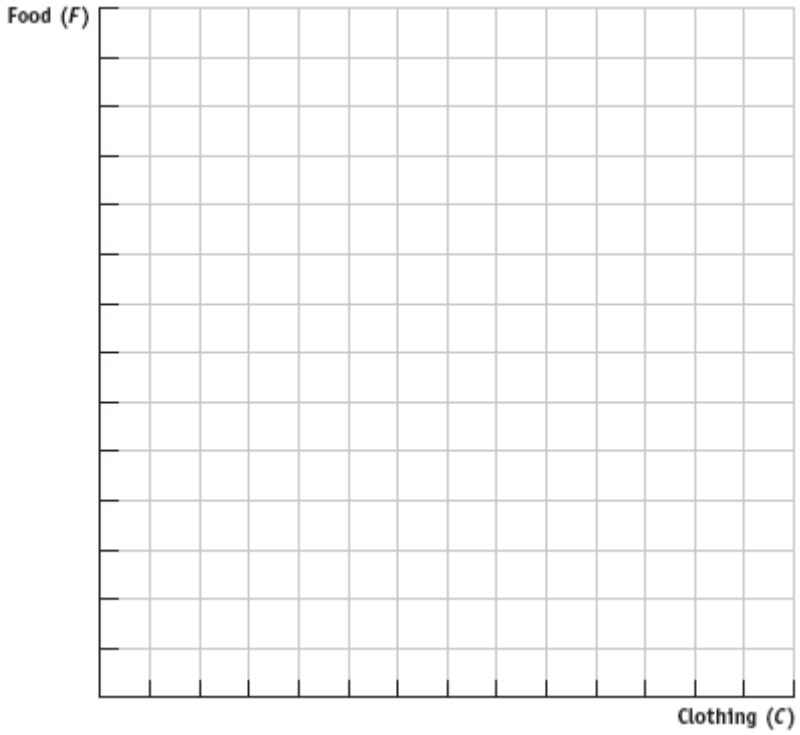
e. Suppose Katherine's weekly income is $40 but the price of food rises to $4 per unit while the price of clothing remains at $10 per unit. Draw a graph of Katherine's initial budget line and her new budget line. How does this change in the price of food affect Katherine's budget line?



f. Suppose Katherine's weekly income is $40 but the price of clothing falls to $5 per unit while the price of food stays constant at $2 per unit. Draw a graph of Katherine's initial budget line and her new budget line. How does this change in the price of clothing affect Katherine's budget line?



g. Suppose Katherine's weekly income increases to $80 while the prices of food and clothing double. Draw a graph of Katherine's initial budget line and her new budget line. How does this change in income and prices affect Katherine's budget line?



Exercise 3

Mark consumes ice cream and hamburgers. The table below provides information about the relationship between the quantity of ice cream and hamburgers and the total utility Mark gets from their consumption.

Utility from Ice Cream Consumption		Utility from Hamburger Consumption	
Quantity of ice cream (cones)	Total utility from ice cream (utils)	Quantity of hamburgers	Total utility from hamburgers (utils)
0	0	0	0
1	20	1	15
2	38	2	28
3	53	3	39
4	66	4	48
5	77	5	53
6	84		
7	89		
8	92		
9	94		
10	95		

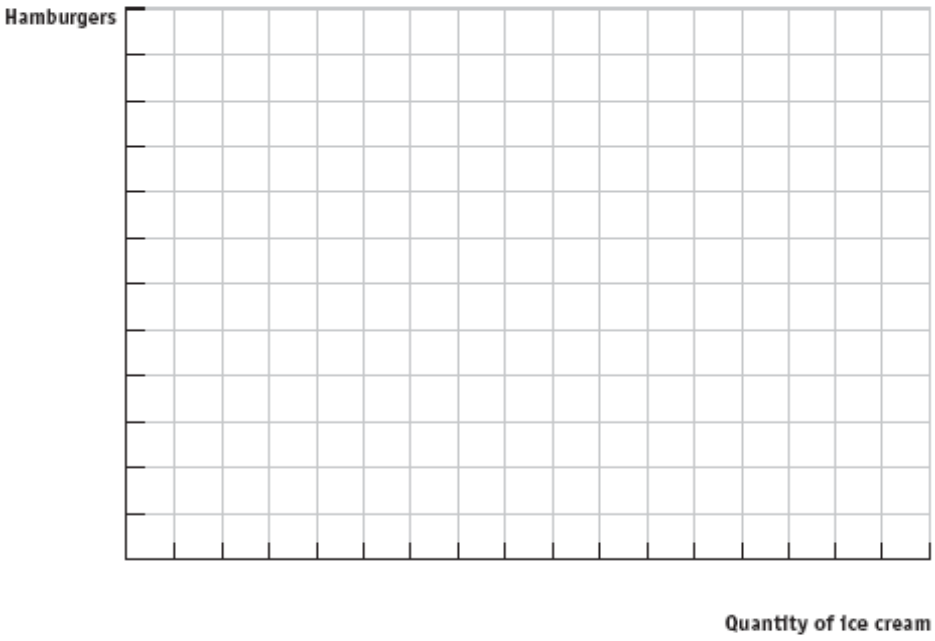
Mark's income for expenditure on ice cream and hamburgers is $50 per month, the price of ice cream is $5 per cone, and the price of hamburgers is $10 per hamburger.

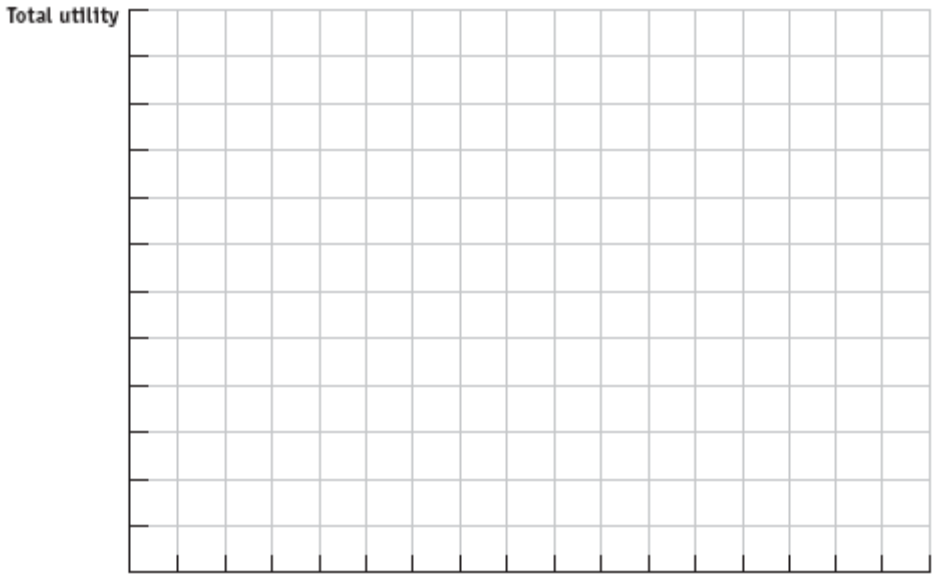
a. Complete the following table based on the above information.

Consumption bundle	Quantity of ice cream (cones)	Utility from ice cream (utils)	Quantity of hamburgers	Utility from hamburgers (utils)	Total utility (utils)
A	0		5		
B				48	86
C	6		2		
D		92			107
E	10		0		

b. Draw a horizontal line and label points along this line to correspond to the different combinations of ice cream and hamburgers Mark can afford given his income and the prices of the two goods. Moving from left to right along this horizontal line, the number of ice cream cones increases while the number of hamburgers decreases.

c. Graph the results from part (a) using two different graphs. In the first graph, put the quantity of ice cream cones on the horizontal axis and the quantity of hamburgers on the vertical axis. Draw Mark's budget line and label consumption bundles *A* through *E* on this budget line. On a second graph drawn just below the first graph, draw Mark's total utility function: measure Mark's total utility on the vertical axis and the quantity of ice cream and the quantity of hamburgers on the horizontal axis—you practiced drawing this horizontal axis in part (b) of this problem. Moving from left to right along the horizontal axis, the number of ice cream cones increases while the number of hamburgers decreases. Label consumption bundles *A* through *E* on Mark's total utility curve.



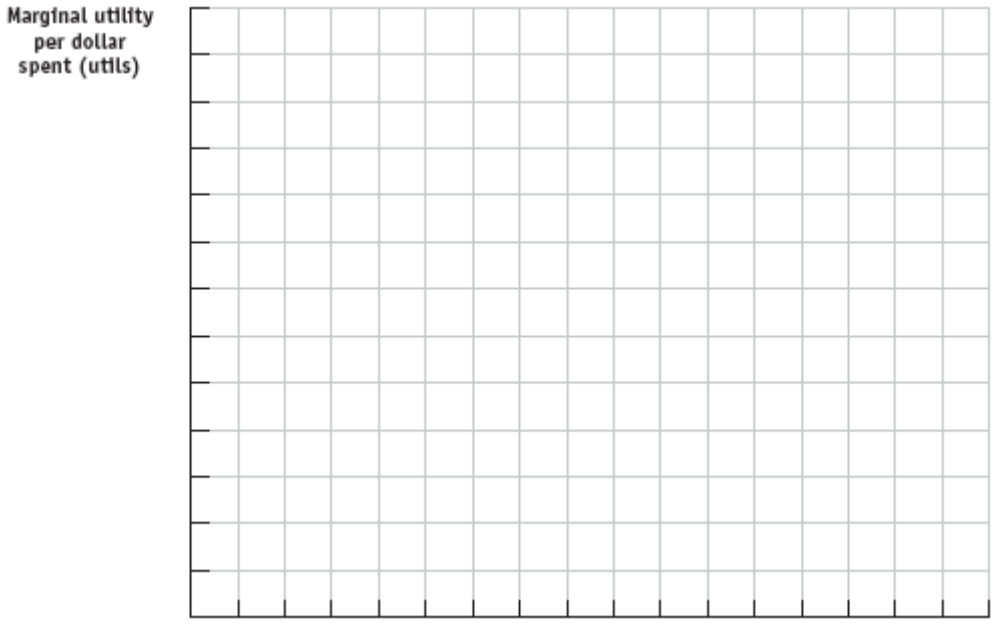


d. Given your work in part (a) and the information you graphed in part (c), which consumption bundle is the optimal consumption bundle for Mark? Why is this bundle the optimal consumption bundle?

e. In the table below, calculate Mark's marginal utility per ice cream cone (*MU*ic), his marginal utility per dollar spent on ice cream (*MU*ic/*P*ic), his marginal utility per hamburger (*MU*h), and his marginal utility per dollar spent on hamburgers (*MU*h/*P*h). Remember that the price of ice cream is $5 per cone and the price of hamburgers is $10.

Ice Cream				Hamburgers			
Quantity of ice cream (cones)	Utility from ice cream (utils)	MU_{ic} (utils)	MU_{ic}/P_{ic} (utils)	Quantity of hamburgers	Utility from hamburgers	MU_h (utils)	MU_h/P_h (utils)
0	0			0	0		
		20	4			15	1.5
1	20			1	15		
2	38			2	28		
3	53			3	39		
4	66			4	48		
5	77			5	53		
		7	1.4				
6	84						
7	89						
8	92						
9	94						
10	95						

f. Draw a graph of Mark's marginal utility per dollar spent on ice cream and marginal utility per dollar spent on hamburgers. This graph's horizontal axis should be labeled in the same manner as the one you drew in part (b) of this problem, while the vertical axis should measure Mark's marginal utility per dollar.



g. At the optimal consumption bundle C, what is the relationship between the marginal utility per dollar spent on ice cream and the marginal utility per dollar spent on hamburgers?