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All questions must be answered on this test form!

For each question you must show your work and (or) provide a clear argument.

All graphs must be accurate to get credit.

Question 1 Joe only consumer pizza and soda. If he spends all his money, he can either purchase 12 sodas and 5 pizzas or 4 sodas and 9 pizzas. If the price of a pizza is 6 Dollars, then you can conclude that

the price of a soda is

7 points

Question 2 Mary only consumes two goods. If she spends all her money on good 1 then she can afford 20 units. The slope of her budget line is $-1/2$. If she spends all her money on good 2, how many units can she afford?

She can afford units of good 2

7 points

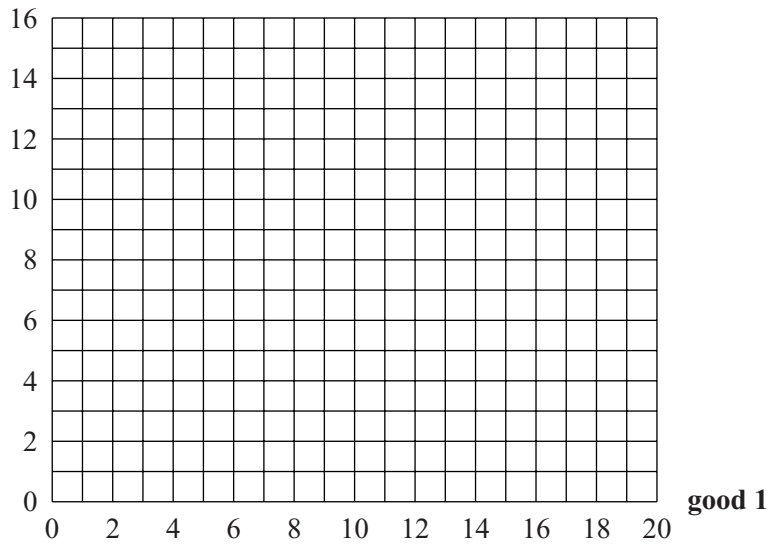
Question 3 George's utility function is given by $u(x_1, x_2) = \min\{x_1 + 3x_2, 3x_1 + x_2\}$. Then the following points are on the same indifference curve as (4, 4) (fill in the missing numbers)

10 points

- (0,),
- (2,),
- (7,),
- (, 0),

Graph the indifference curve in the grid below and shade that set of all consumption choices that are strictly better than (4, 4).

good 2



Question 4 A person's utility function is given by $u(x_1, x_2) = x_1 + 4\sqrt{x_2}$. Therefore,

MRS(16, 4) =

7 points

Question 5 A person's preferences are given by $u(x_1, x_2) = \min\{x_1, 3x_2\}$. The prices of the goods are $p_1 = 2$, $p_2 = 4$. At the optimal choice the person consumes 30 units of good 2. Therefore, you can conclude that the person's income is

$m =$

7 points

Question 6 Now consider a person whose preferences are given by $u(x_1, x_2) = 4x_1 + x_2$. At the optimal choice the person consumes 3 units of good 1 and 2 units of good 2. The price of good 1 is 12. Therefore,

$p_2 =$

7 points

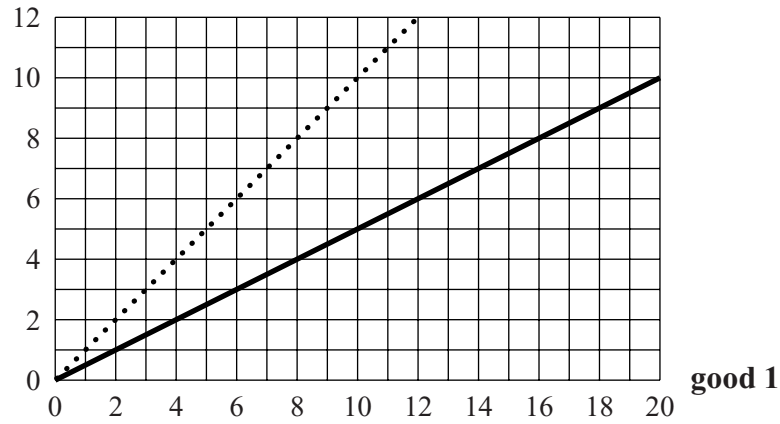
Question 7 A person's income is $m = 12$. The prices are $p_1 = 5$ and $p_2 = 3$. Let $(3, 7)$ be the optimal consumption choice. If the person has "nice" (i.e., convex and monotone) preferences then

$MRS(3, 7) =$

5 points

Question 8 Income offer curves for two different price ratios p_1/p_2 are depicted below.

good 2



The solid line corresponds to a price ratio $p_1/p_2 = 0.25$ and the dotted line to a price ratio $p_1/p_2 = 1$.

Assume that originally a person's income is $m = 24$ and that prices are $p_1 = 2$, $p_2 = 2$. Then the price of good 2 increases to 8. As a result (use a positive number to denote an increase and a negative number to denote a decrease of consumption)

demand for good 1 changes by _____ units

demand for good 2 changes by _____ units

10 points

Question 9 A consumer's MRS is given by

$$\text{MRS}(x_1, x_2) = -\frac{4}{x_1 + x_2 + 2}.$$

Assume prices are $p_1 = 1$, $p_2 = 2$ and that income is $m = 11$. Then the optimal consumption of goods 1 and 2 is given by

$x_1 =$	$x_2 =$
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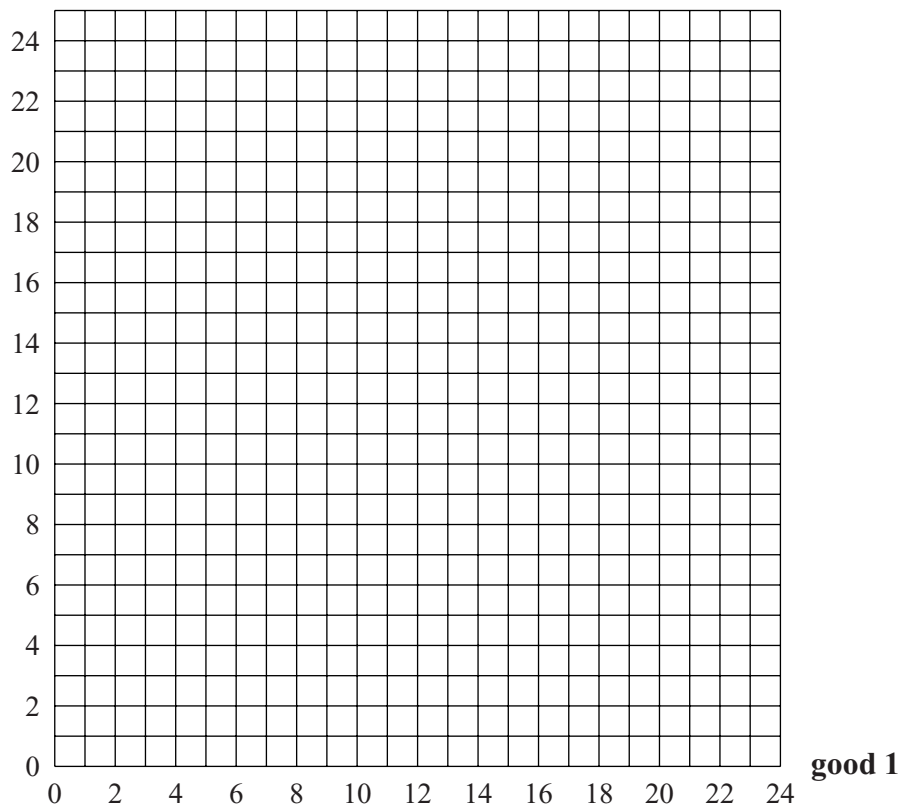
10 points

Question 10 A consumer's utility function is given by $u(x_1, x_2) = \min\{x_1, 3x_2\}$. Assume that the price of good 2 is 1. The price of good 1 is 3 Dollars/unit for the first 3 units and 1 Dollar/unit for every additional unit. The consumer's income is $m = 22$. Graph the budget line in the grid below, *shade the budget set*, and graphically solve for the optimal consumption choice.

At the optimal choice $x_1 =$ $x_2 =$

10 points

good 2



Question 11 A consumer's utility function over hours of long distance calling, h , and money spent on all other goods, x , is given by $u(h, x) = 20h - h^2 + x$. The consumer's income is 1,000 Dollars. Assume the telephone company charges a fixed fee F and a price of 6 Dollars per hour of calls. The company wants to choose F as large as possible, i.e., such that the consumer is indifferent between the following: (a) not signing up for service and spending all his income on other goods or (b) signing up for the service and calling the number of hours, h , that maximize the consumer's utility.

If the consumer signs up, he/she will call $h =$ hours

The company will select $F =$ as fixed fee

10 points

Question 12 Joe is the true average consumer. After he receives his weekly paycheck (which is always the same amount of money), he spends all money either at grocery store A or at grocery store B, acquiring the consumption choices depicted below. The grocery stores run the following ads.

Grocery store A: “Average Joe could not afford the goods that he purchases at our store if he went to store B. Therefore, he is better off shopping with us.”

Grocery store B: “Average Joe could not afford the goods that he purchases at our store if he went to store A. Therefore, he is better off shopping with us.”

Of course, the statement that he is “better off shopping with us” is incorrect. In fact, if you asked Joe he would tell you that he is indifferent between going to store A or store B.

Graph two budget lines and a “nice” (i.e., convex and monotone) indifference curve that are compatible with the story, i.e.,

1. He cannot afford the consumption choice he purchases at store A if he went to store B and vice versa.
2. The consumption choices are optimal.
3. Joe is indifferent between the two consumption choices.

10 points

good 2

