Name:

E-mail:

All questions must be answered on this test form! The answers in the boxes count.
For each question you must show your work and (or) provide a clear argument.
All graphs must be accurate to get credit.
If you need scratch paper, use the last page or the back of the form..

Question 1 **(a)** Henry only consumes chocolate and ice cream. His utility function is given by $u(x_C, x_I) = \min\{x_C, x_I\}$, where x_C the quantity of chocolate cream and x_I the quantity of ice cream consumed. Suppose price are $p_C = 6$ and $p_I = 3$. His income is $m = 900$. Then his optimal consumption consists of *7 points*

units of chocolate, and	**units of ice cream.**

(b) Henry's brother Joe is also a chocolate and ice cream only consumer. However, his utility function is $u(x_C, x_I) = \max\{x_C, x_I\}$. Then his optimal consumption consists of *7 points*

units of chocolate, and	**units of ice cream.**

Question 2 George's utility function for apples and bananas is

$$u(x_A, x_B) = (x_A^{-1} + x_B^{-1})^{-1},$$

where x_A denotes bushels of apples and x_B bushels of bananas. The MRS is therefore MRS $= x_B^2/x_A^2$. Suppose a bushel of apples costs $p_A = 1$, and a bushel of bananas $p_B = 9$. George's income is $m = 180$. Then *15 points*

the equation of the income offer curve is .

His optimal consumption choice is

$x_A =$ $,x_B =$.

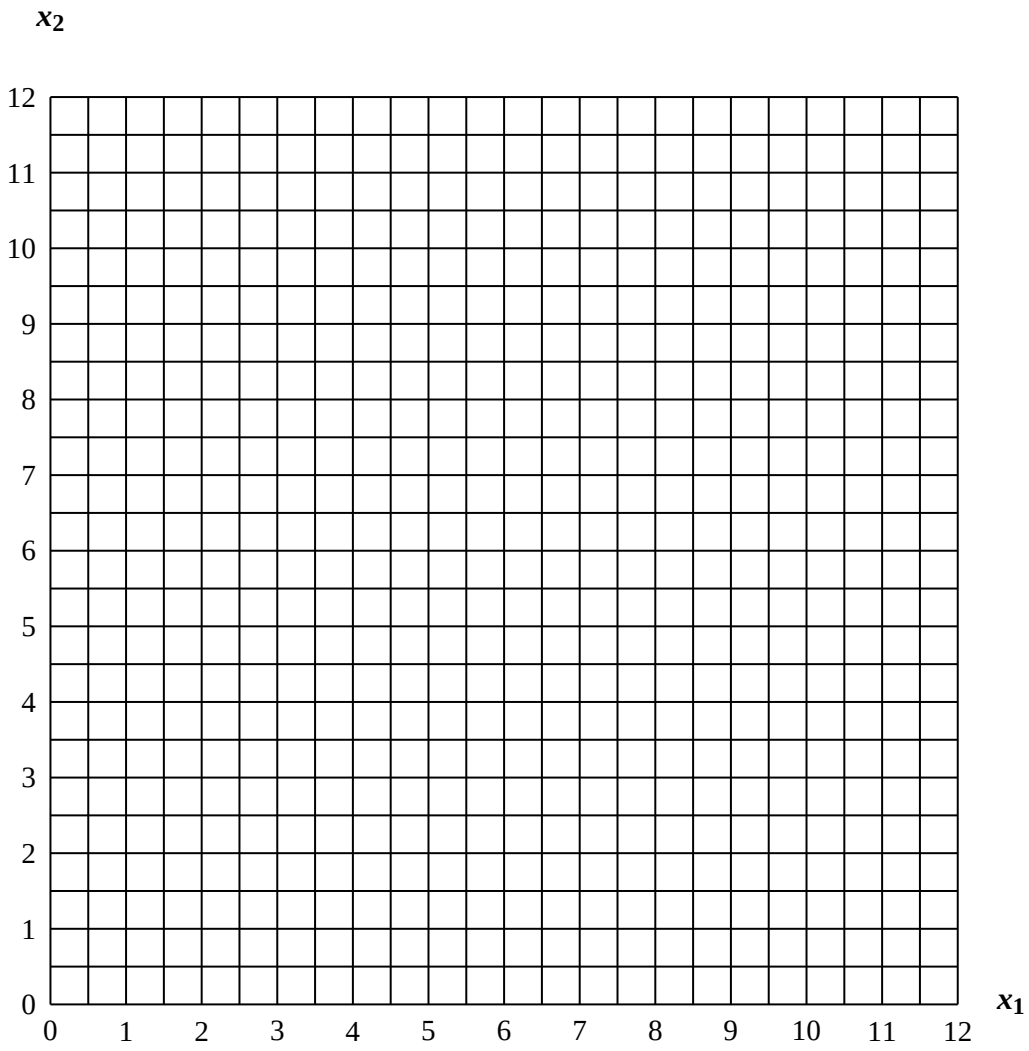
Question 3 George's friend Mr. Yellowhat eats solely steak and eggs. He has perfect substitutes preferences. He is always willing to give up two steaks in exchange for 14 eggs eggs. He currently consumes 10 steaks and 6 eggs. The price of an egg is 50cents. *10 points*

Then Mr. Yellowhat's income is $I =$.

Note: There is enough information to solve this question.

Question 4 A utility function is given by $u(x_1, x_2) = \min\{2x_2, x_1 + x_2\}$. Graph the indifference curve through $(0, 8)$.

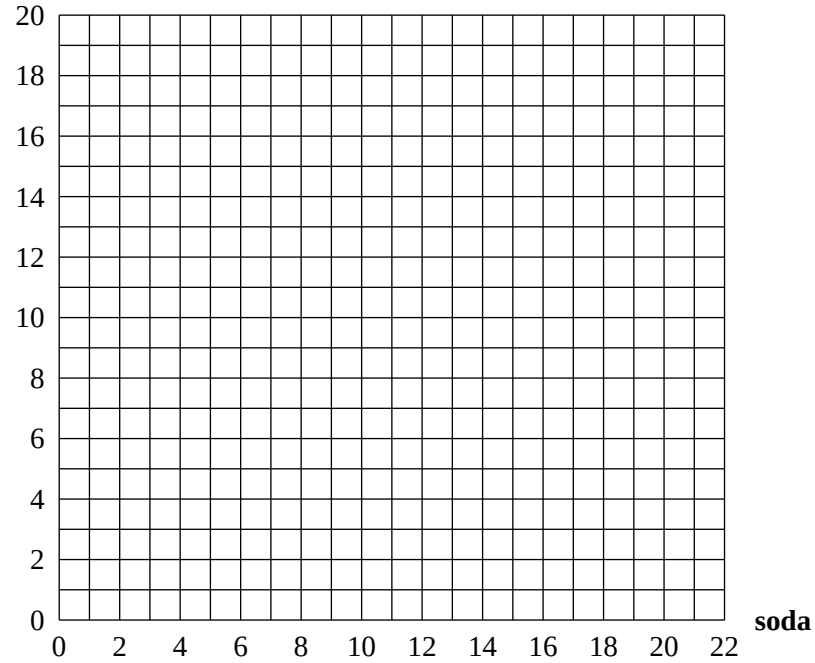
*N*ote: This is utility function is very similar to that we graphed in Lecture 4. It does not describe perfect complements preferences. *10 points*



Question 5 If Amy spends her entire allowance, she could afford 9 sodas and 4 servings of ice cream. She could also just afford 3 sodas and 12 servings of ice cream.

(a) Draw her budget line the the box below. *5 points*

ice cream

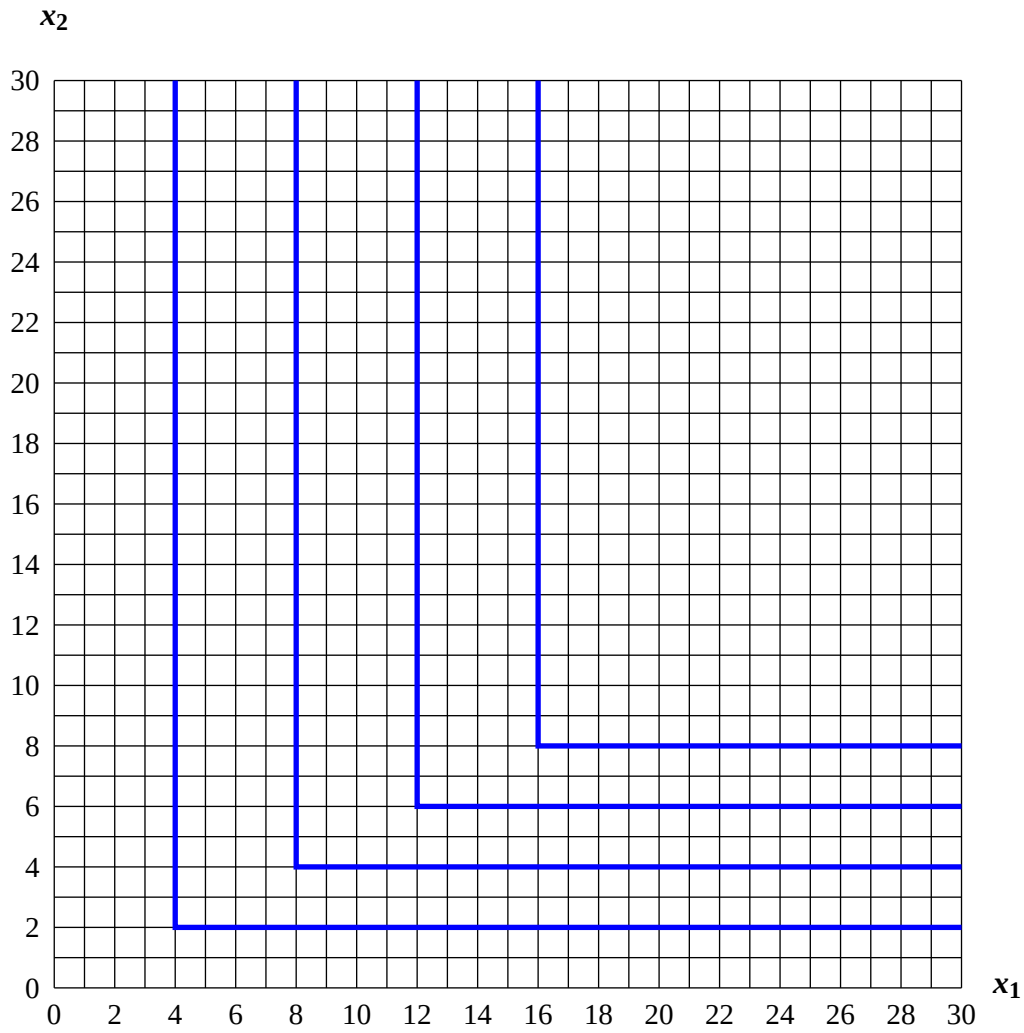


(b) Let x_1 be consumption of soda, and x_2 consumption of ice cream. Amy's budget line is given by the equation

$$x_1 + \square\, x_2 = \square$$

Fill in the blanks only! *5 points*

Question 6 A person's indifference curves are depicted below.



The person's income is $I = 30$. Originally prices are $p_1 = 2$, $p_2 = 1$. Then the price of good 2 increases to $p_2 = 2$. Then *10 points*

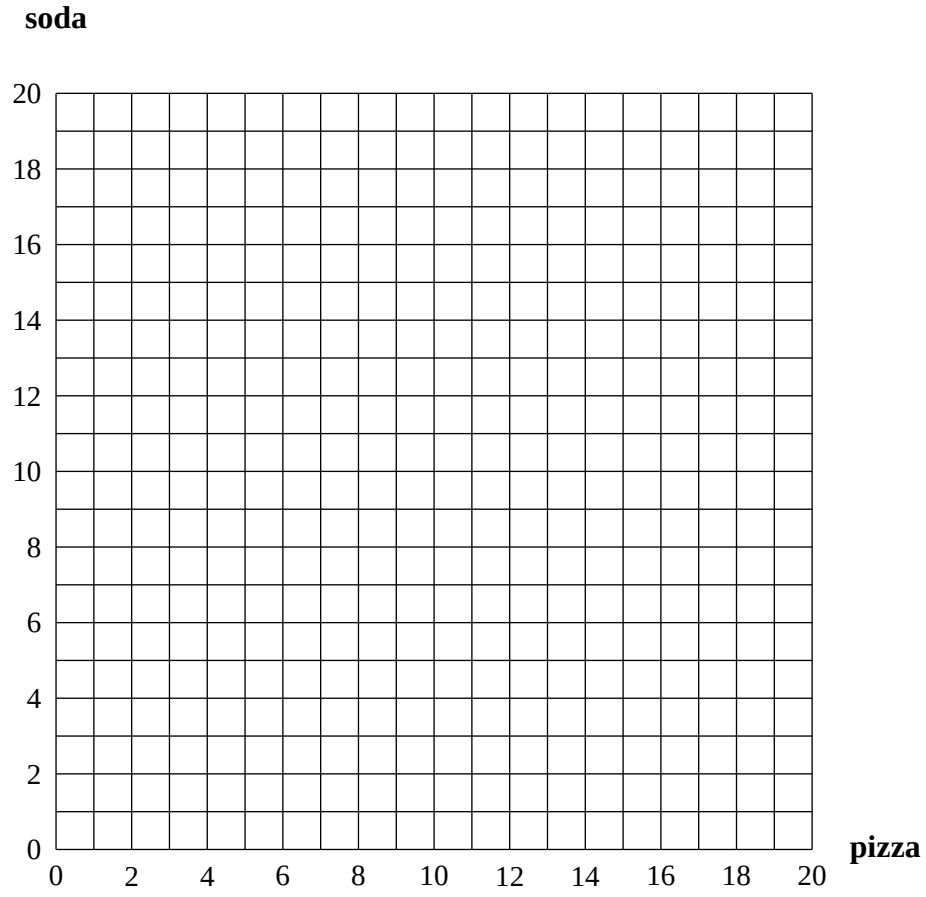
Demand of good 1 decreases by **units.**

Demand of good 2 decreases by **units.**

Note: To get credit you must graph the budget lines in above grid.

Question 7 Mary only consumes pizza (graphed below on the horizontal axis) and soda (graphed on the vertical axis). If Mary has more pizza than soda, she is is always willing to acquire another pizza for 1/2 of a soda. If she has more soda than pizza, she is willing to acquire an additional pizza as long as she does not need to give up more than 4 sodas.

Draw Mary's indifference curve through the point (0, 15). *10 points*



Question 8 Charlie's preferences over long distance calls, t (measured in hours), and consumption of other goods, x (measured in money available for consumption) is given by $u(t, x) = 8\sqrt{t} + x$. Charlie's income is m.

(a) Suppose that the phone company charges a price of 2 Dollars per hour of calls. Then *7 points*

the optimal t = .

He spends Dollars on long distance calls.

(b) Suppose that the phone company offers a "calling plan." For a fixed fee of 20 Dollars, the hourly cost of a long distance call is only 50cents. If Charlie signs up for this plan then *7 points*

the optimal t = .

He spends Dollars on long distance calls.

(c) Let income be $m = 300$. Then *7 points*

His utility from plan (a) is .

His utility from plan (b) is .

As a consequence he prefers **plan (a)** **plan (b)** *mark the correct answer.*

Scratch Paper: Not Graded!!!