MID-TERM II ECON300, 12:30PM (YELLOW) April 10, 2003

Name:

E-mail: *@uiuc.edu*

All questions must be answered on this test form!
For each question you must show your work and (or) provide a clear argument.
If you need scratch paper, please request it from me.

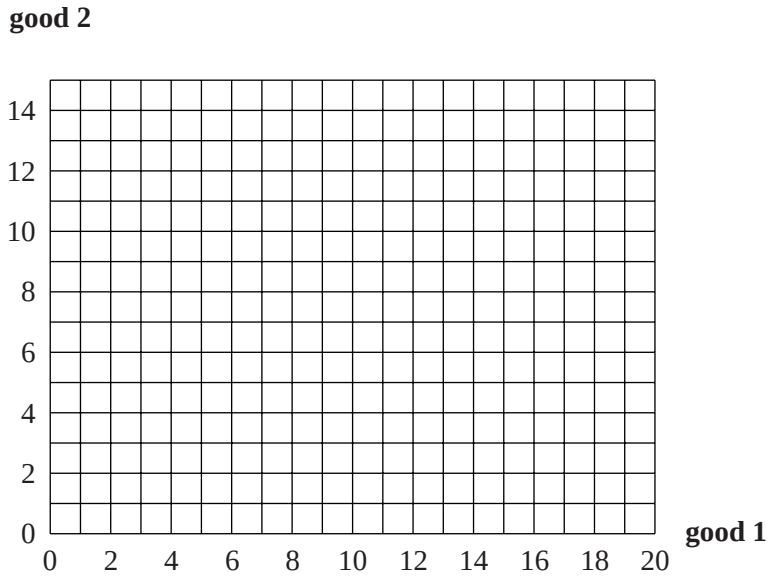
Question 1 Mark's preferences are given by $u(x_1, x_2) = x_1 + x_2$. The prices of the two goods are $p_1 = 2$, $p_2 = 1$. Mark's endowment is given by $e = (12, 10)$. Therefore,

He consumes units of good 2 5 points

Question 2 Joe's preferences are given by $u(x_1, x_2) = \min\{x_1, x_2\}$. If prices for the two goods were the same, i.e., $p_1 = p_2$ then he would consume 4 units of good 1. If, however, good 1 is three times as expensive as good 2, then he would *increase* his consumption of good 2 by 2 units. Therefore, his endowment is given by

$e =$ (,). 10 points

Note: To get credit, you must graph the two budget lines, the endowment, and the consumer's indifference curve at each optimal choice.



Question 3 Mary's preferences are given by $u(x_1, x_2) = x_1 x_2^2$. She has an endowment of 20 units of good 1, but you don't know her endowment of good 2. At prices $p_1 = 2$, $p_2 = 1$ it is optimal for Mary to consume her endowment. Therefore, you can conclude that

Mary's endowment of good 2 is

5 points

Question 4 Joe can earn 16 Dollars per hour. He has 80 hours per week that he can allocate between leisure and labor. He has 100 Dollars per week income from sources other than labor. His utility function $u(R, c)$ has an MRS $= -\frac{c^2}{R^2}$ (in a graph you would have leisure on the horizontal and labor on the vertical axis).

Joe will work **hours per week.**

10 points

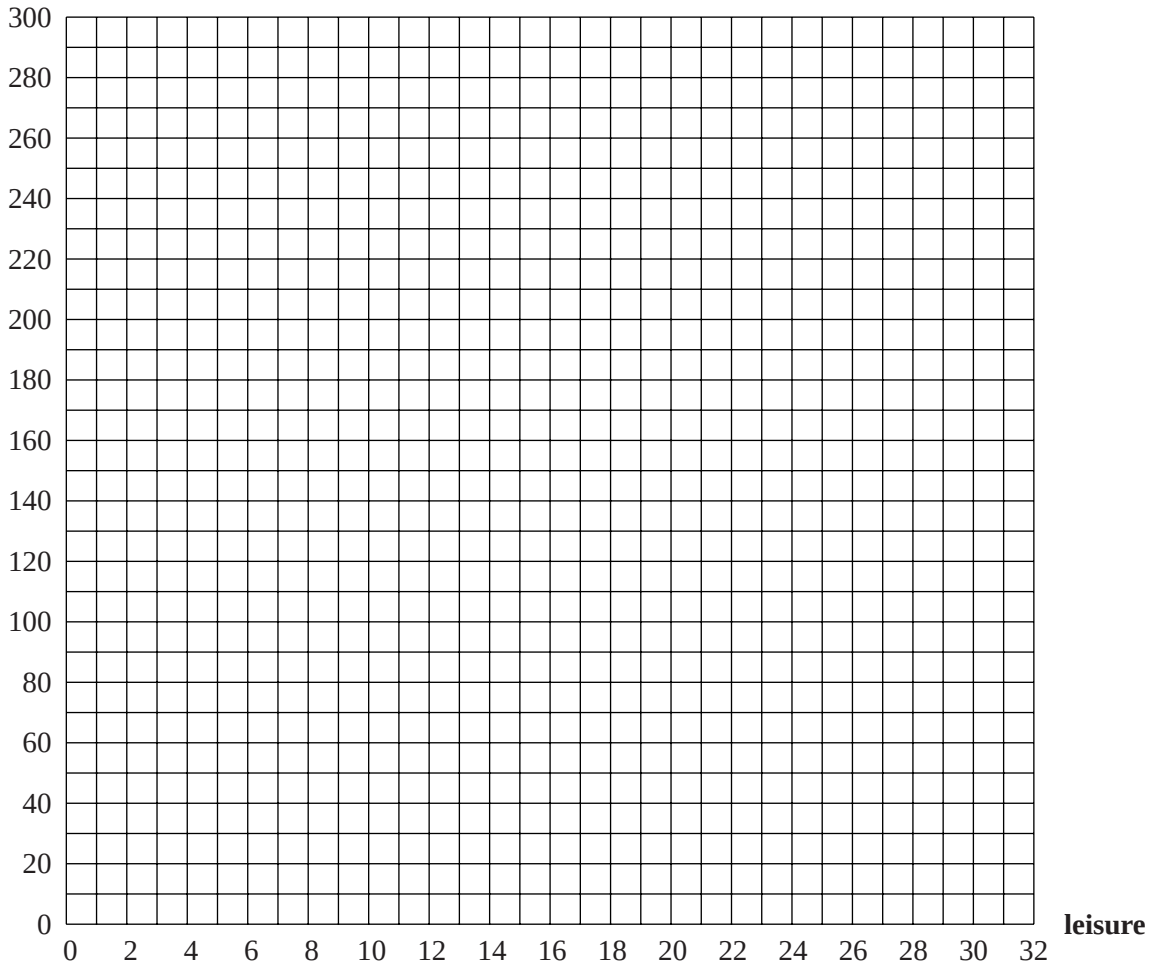
Question 5 Alice earns 10 Dollars per hour and she can choose how many hours to work. If she makes less than 80 Dollars a week then she does not pay taxes. Once her weekly income exceeds 80 Dollars, she must pay taxes. In particular, if her weekly income is m, then she pays 50% of the amount that exceeds 80 (i.e., 50% of $m-80$) as tax to the government. Alice has no income from other sources. She has 28 hours per week that she can allocate between leisure and labor. Assume her preferences are given by $u(R,c) = \min\{50R, 2c\}$. Then

Alice will work hours per week.

If the tax is eliminated then Alice will work hours per week.

Note: You must solve this question graphically, using the grid below. 15 points

consumption



Question 6

(a) George has an after-tax income of 40,000 Dollars this year and 40,227 Dollars next year. His utility function is $u(x_1, x_2) = \ln(x_1) + 0.9\ln(x_2)$, which yields an MRS of $-\frac{x_2}{0.9x_1}$. The interest rate is 10%. Then

George will spend $ this year. 10 points

To get credit, you must use the MRS condition for an optimal choice.

(b) Now assume that taxes are lowered. As a consequence, George's income is 42,000 Dollars this year and 43,080 Dollars next year. However, because the government is expected to run a deficit, the interest rate is now 20%.

George will spend $ this year. 10 points

To get credit, you must use the MRS condition for an optimal choice.

Question 7 Susan has 1,750 Dollars which she wants to allocate between two mutual funds, A, B. The economy will recover (state g) with probability 0.4, or will remain in a recession (state b) with probability 0.6. Each Dollars invested in fund A will yield a return of 1.6 Dollars in state g and 0.6 Dollars in state b. In contrast, each Dollar invested in fund B will have a return of 0.9 Dollar in state g and 1.1 Dollars in state b. Susan's preferences are described by the Bernoulli utility function $\ln(x)$. 15 points

Susan will invest $	**in fund *A*.**

Susan will invest $	**in fund *B*.**

Question 8 Nick considers playing in a lottery. With probability 0.2 he can win 100 Dollars, with probability 0.1 he can win 400 Dollars. Otherwise, with probability 0.7 his payoff is 10. Nick's Bernoulli utility function is $u(x) = -\frac{100}{x}$. 10 points

Nick's expected utility from playing the lottery is

To get credit, list at least 3 digits after the period.

Nick should pay at most \$ to play the lottery.

To get credit, list 2 digits after the period.

Question 9 Clarence's Bernoulli utility function is given by $u(x) = \sqrt{x}$. He has 10,000 Dollars and is considering making a bet where he would lose 6,400 Dollars with probability $1/3$ and win y Dollars with probability $2/3$. It turns out that he is exactly indifferent between making the bet and not making the bet. Therefore,

$y =$

10 points