Problem Set #4
ECNS 204
Due Monday, Oct. 5th by 10am
Submit via email to TA at alectruax@gmail.com

_____Name

1.) Listen to the following University of Chicago Pandemic Economics podcast, "Can COVID Change the Climate?" (a link will also be posted on the course webpage)
https://bfi.uchicago.edu/podcast/can-covid-change-the-climate/

Summarize the podcast and describe the policy lessons learned from the COVID-19 pandemic regarding climate change. From an economic perspective, has the pandemic been worth it in terms of emissions reductions? Why or why not?

Guidelines:
-One to two pages typed (going over two pages will results in loss of points)
-Double spaced
-Size 12 Times New Roman font
-Failure to follow any of these guidelines will result in loss of points

2.) Given the diagram below, provide a logical explanation for why indifference curves cannot cross.
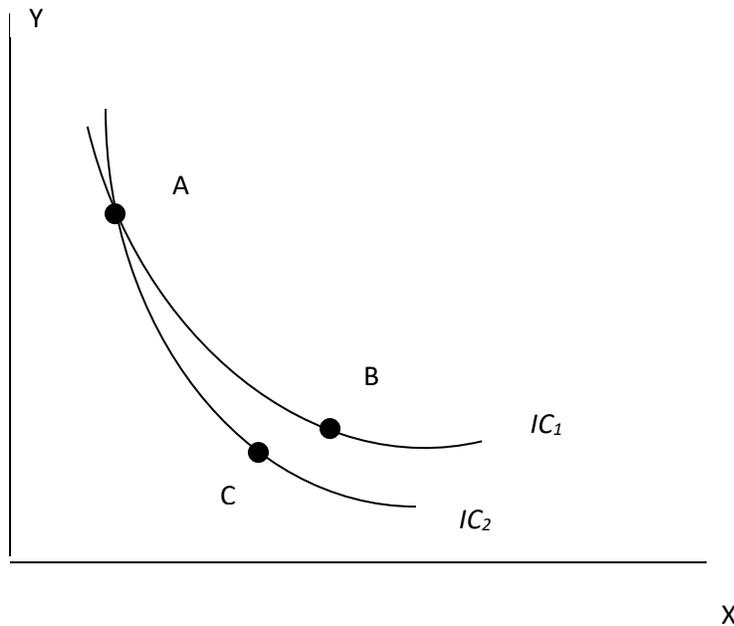
3.) Suppose a consumer spends all of his income, I, on goods x and y. The price of x is P_x and the price of y is P_y.

a.) Write an equation describing the consumer's budget constraint.

b.) Graph the consumer's budget line. **Make sure to label your graph (including the vertical and horizontal axis intercepts).** Show the consumer's optimal consumption decision with an indifference curve. What does the slope of the budget line represent? What does the slope of the indifference curve represent?

4.)   a.) Suppose X is a normal good. Show this in the diagram below by drawing indifference curves tangent to the budget constraints and including the compensated budget line. In the space to the right, draw a separate diagram illustrating the compensated demand curve for good X and the standard demand curve for good X. Is the compensated demand curve steeper in slope or shallower in slope then the standard demand curve?

b.) Now, instead of assuming X is normal, assume X is inferior. Under this assumption, is the compensated demand curve for X steeper in slope or shallower in slope than the standard demand curve? Support your answer with two graphs: an indifference curve + budget constraint diagram for an inferior good; a graph illustrating the compensated demand curve for X and the standard demand curve for good X.

5.) Suppose Alfred earns $10/hr. and at this wage he chooses to work 10 hrs./day. Now, suppose that Alfred has received a raise to $15/hr. Will Alfred choose to work more or fewer hours per day under this higher wage rate? Or, given this information, is it not possible to tell whether he will work more or less? What does your answer depend on?

Support your answer with an indifference curve and budget constraint analysis.

6.) Suppose Jay earns $20 per hour at his job. Also suppose that the government has imposed an income tax of 25% and that Jay has decided to work 8 hours per day under this tax scheme.

a.) Draw a graph with two budget constraints for Jay. One under the assumption of no tax and the other under the income tax scheme described above. Also draw the indifference curve that shows Jay's optimum leisure/income combo under the income tax scenario. Make sure to label your graph! This includes the points of intersection between the budget constraints and the vertical and horizontal axes and the point of tangency between the IC and budget constraint.

b.) Now suppose that the government has decided to decrease the income tax to 10%, but to add a head tax of $24 per day. The income tax is imposed on Jay's pre-head tax income. Which tax

regime does Jay prefer? The income tax of 25% from part a.) or the income tax of 10% plus a $24 per-day head tax? Support your answer with a graphical analysis. Again, label your graph or you will lose points. (Hint: Think about drawing the income tax + head tax budget constraint in two steps. First, consider how the 10% income tax changes Jay's budget constraint. Then, consider how the head tax changes the budget constraint that would exist if only a 10% income tax were imposed).