

ECN 360
Homework #1
Due 9/16/2021

Directions: Answer each question **on a separate piece of paper**. Please be neat!
Submit your homework via email to me at: ccdougla@umich.edu. A .pdf is preferred, though any file works in practice.

1. Imagine a society that produces military goods and consumer goods, which we'll call "guns" and "butter".
 - a. Draw a production possibilities frontier for guns and butter. Using the concept of opportunity cost, explain why it most likely has a bowed-out shape.
 - b. Show a point that is impossible for the economy to achieve. Show a point that is feasible, but inefficient.
 - c. Imagine that a society has two political parties, called the Hawks (who want a strong military) and the Doves (who want a smaller military). Show a point on your production possibilities frontier that the Hawks might choose and a point that the Doves might choose.
 - d. Imagine that an aggressive neighboring country reduces the size of its military. As a result, both the Hawks and the Doves reduce their desired production of guns by the same amount. Which party would get the largest "peace dividend", measured by the increase in butter production? That is, which party would see the largest increase in the production of butter, because of decreased production of guns? Explain.
2. Suppose a consumer has income of \$3,000 that he only spends on wine and cheese. Suppose that wine costs \$3 a glass and cheese costs \$6 per pound.
 - a. Draw the consumer's budget constraint. Put wine on the y-axis and cheese on the x-axis. What is the slope of his budget constraint and what does it tell us?
 - b. Draw a consumer's indifference curves for wine and cheese. Put wine on the y-axis and cheese on the x-axis. Describe and explain the four properties of these indifference curves.
 - c. Pick a point on the indifference curve for wine and cheese and show the marginal rate of substitution. What does the marginal rate of substitution tell us? (Note: you don't have to pick actual numbers on the indifference curve for the marginal rate

- of substitution. Just identify where the marginal rate of substitution is and what it tells us).
- d. Show a consumer's budget constraint and indifference curves for wine and cheese. Pick a point on the budget constraint and show the optimal consumption choice using indifference curves (again, you don't have to use actual numbers). If the price of wine is \$3 a glass and the price of cheese is \$6 a pound, what is the marginal rate of substitution at this optimum? (Hint: what does the marginal rate of substitution equal at the consumer's optimal choice?)
- e. The price of cheese rises from \$6 to \$10 a pound while the price of wine remains at \$3 a glass. The consumer's income remains at \$3000. Show how the budget constraint changes because of this price increase. Pick any point on this new budget constraint and show the consumer's new optimum, using indifference curves.