1. (From Rosen, Chapter 8, revised a bit.) In California, a welfare recipient can earn $60 per week without having her benefits reduced. Beyond $60, benefits are reduced by 50 cents for every dollar earned. Consider Elizabeth, a resident of California, who can earn $10 per hour. If she does not work at all, she is eligible for welfare benefits of $60.

a. If she works 10 hours, how much are her earnings?

\[ 10 \times 10 \text{ hours} = 100 \]

b. If she works 10 hours how much is her welfare benefit?

\[ \text{Benefit if zero earnings} = 60 \\
\text{Reduction} = (100 - 60) \times 0.50 = 20 \\
\text{Welfare} = 60 - 20 = 40 \]

c. If she works 10 hours, how much is her income?

\[ \text{Earnings} + \text{Welfare} = 100 + 40 = 140 \]

d. If Elizabeth works a certain number of hours, she does not receive any benefit at all. What is the number of hours?

\[ 18 \text{ at } 18 \text{ hours} \]

\[ \text{Benefit if zero earnings} = 60 \\
\text{Reduction} = (180 - 60) \times 0.50 = 60 \]

\[ \text{Welfare} = 0 \]

e. In light of your answers in a-d, plot her budget constraint. Place income on the horizontal axis and hours of leisure on the vertical. Label and number the axes. You may assume she has 100 hours to use between labor and leisure in a week.

f. Please sketch an indifference curve consistent with Elizabeth participating in the labor market.
2. Suppose we examine the share of aggregate income received by income quintiles in the United States and Germany.

<table>
<thead>
<tr>
<th>Quintile</th>
<th>United States</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>3.5%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Second</td>
<td>8.8%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Middle</td>
<td>14.8%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Fourth</td>
<td>23.3%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Highest</td>
<td>49.7%</td>
<td>44.7%</td>
</tr>
</tbody>
</table>

a. In the space below draw the Lorenz curve for the United States. Carefully number and label the axes.

b. Show how the Gini coefficient is calculated

\[
\text{Area } A = \frac{\text{Area } A + B}{\text{Total area}}
\]

c. Is the Gini coefficient going to be higher or lower in Germany?

Lowest: Yes

Middle: No

d. What does the number tell us about the degree of income equality in the United States and Germany?

United States: More equal than Germany

Germany: Less equal than the United States

e. What has happened to income inequality in the United States in your lifetime?

It has gotten more unequal

f. The data in the table was for households. Would the Gini coefficient for individuals be higher or lower in the United States? Explain why.

More equal (lower Gini) because households contain multiple people which causes income distribution to be more spread out.
3. Let us suppose that an econometrician finds that the annual demand for physician office visits by an elderly person is:

\[ Q_v = 10 - .05 P_v \quad Q_v = \text{Quantity of visits and } P_v = \text{Price of visits} \]

a. If a visit to a physician costs $120, how many would this person purchase?

\[ Q = 10 - .05 (120) = 10 - 6 = 4 \]

b. Let us suppose that the person is covered by Medicare. Medicare currently has a deductible of $124 for physician services. Please explain what this means.

The Medicare recipient has to pay the first $124 of physician visits in a year.

c. Let us suppose that we will assume that I will pay the person’s deductible so it no longer enters into the picture. Under Medicare, what share of the visit does our elderly person pay?

\[ \frac{120}{424} = 10 - 1.2 = 8.8 \]

d. How many physician visits would our person now consume, assuming they must pay the share you gave in part c. and that there was no deductible?

\[ \frac{120}{424} \]

e. We have discussed several reasons for the government to intervene in the economy, i.e., the six market failure and two other reasons. What is the primary reason the government intervenes in the market for physician visits?

Income redistribution

f. What is adverse selection? Please discuss how it can be related to the government paying for insurance for health care.
4. a. The United States currently funds the old age portion of social security on a pay-as-you-go system. Please explain how this works.

b. How is the level of social security benefits determined?

c. In general, who gets a better return on their social security taxes paid in; higher income people or lower income people? Explain why.

d. In general, who gets a better return on their social security taxes paid in; married couples or single people? Explain why.

e. Why might social security depress the rate of savings?

f. Suppose Henry is eligible for social security benefits of $1,000 per month. Please discuss the impact on an increase in his income from non-employment sources on his income.
5. Let us assume that we can represent the year by the letter \( i \) and the discount rate by the letter \( r \).

   a. What is the formula for the Present Value of Benefits from a project under Cost Benefit Analysis?
   \[
   PV = \sum_{i=0}^{m} \frac{\text{Ben yr } i}{(1+r)^i}
   \]
   \( m \) years

   b. What is the formula for the Present Value of Costs from a project under Cost Benefit Analysis?
   \[
   PV_{\text{cost}} = \sum_{i=0}^{m} \frac{\text{Cost yr } i}{(1+r)^i}
   \]
   \( m \) years

   c. Sometimes the benefits in a Cost Benefit Analysis don’t have a market value. Please give an example of this and discuss how we might come up with a dollar value for the benefit.

   - A human life - we could estimate what the person would have earned
   - A job - we can survey people as to what they would pay to swim

   d. What exactly does the (social) discount rate tell us?
   The amount that we discount a future benefit to see its value in today’s terms

   e. The formula requires that we come up with a value for the discount rate. Rosen discusses several possible measures. Please explain one such alternative.

   - Rate of return in private sector
   - Rate good society is in people’s best interest (consensus)
   - Time preference rate set by

   f. In general, higher (social) discount rates reduce the probability a project would be built. Why is this the case?

   Because benefits come later and costs up front. A higher discount rate has a greater impact on the benefits and reduces them more
Numbers 6-13 are worth five points each. Answer all of them.

6. How is the poverty level defined in the United States?

7. a. Approximately what percentage of Americans are poor under the official definition? About 12%

b. In class, we cited several flaws with the current poverty level. Please give one and briefly explain it.

8. In class we discussed several reasons for the increase in health care costs in the United States. Please cite and briefly explain two.

9. a. What is the difference in funding sources between Medicare and Medicaid?

b. Which population group does Medicare serve and which does Medicaid serve?
10. Cite and briefly explain two differences between TANF and the program it replaced.

- TANF - time limits (up to 5 yrs) on receiving benefits.
- TANF - work or training requirement. Not with TAN.
- TANF - varies by state, but usually less than 10% of implicit tax rate (0.2 means 20% reduction in (for $1 earned)

Use the following diagram for numbers 11-13.

11. a. Suppose that Charley has $200 in income. Draw his budget line. Label it AB.
   b. Draw an indifference curve showing Charley spending $100 on each. Label it I1.
   c. Let us give Charley $50 in Food Stamps. Draw his new budget line and label it CD.
   d. Draw a new indifference curve that is consistent with the first one and label it I2.

12. Was there an income effect in number 11? If so, show it.

13. Was there a substitution effect in number 11? If so, show it.