1. (4 points) In the graph to the right and in the spaces below, indicate what will happen in the market for VCRs if DVDs fall in price. (You may assume consumers regard them as substitutes). LABEL THE AXES AND CURVES.

<table>
<thead>
<tr>
<th>Demand</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supply</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. (4 points) Suppose we find that when a local store reduces the price of shmatahs they find.

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5</td>
<td>100</td>
</tr>
<tr>
<td>$4</td>
<td>105</td>
</tr>
</tbody>
</table>

a) Calculate the elasticity (responsiveness) of demand.

\[
\frac{\Delta q}{\Delta p} = \frac{\frac{\Delta q}{\Delta p}}{\Delta p} = \frac{100 - 105}{5} = \frac{-5}{5} = -1
\]

b) Is the demand elastic (responsive)? How can you tell?

No. It is inelastic as \( -1 < 1 \).

c) Cite one factor that makes the demand for a product inelastic.

- necessary
- few substitutes
- small part of budget
- shorter time period
*3. (4 points) Suppose a worker in Germany can produce 15 computers or 5 tons of grain per month. Suppose a worker in Poland can produce 4 computers or 4 tons of grain per month. For simplicity, assume that each country has only one worker.

<table>
<thead>
<tr>
<th>Computers</th>
<th>Grain</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>15</td>
</tr>
<tr>
<td>Poland</td>
<td>4</td>
</tr>
</tbody>
</table>

a) What is the opportunity cost of a computer in Poland? What is the opportunity cost of a ton of grain in Poland?

\[
\text{Poland Comp} \quad \frac{\text{Give}}{\text{Get}} = \frac{4}{4} = 1 \quad \text{Grain} \\
\text{Poland Grain} \quad \frac{\text{Give}}{\text{Get}} = \frac{4}{4} = 1 \quad \text{Comp}
\]

b) Which country has the absolute advantage in producing computers? Grain?

Germany, Germany

c) Which country has the comparative advantage in producing computers? Grain?

Germany Comp

\[
\text{Germany Comp} \quad \frac{\text{Get}}{\text{Give}} = \frac{15}{5} = 3
\]

\[
\text{Poland Grain} \quad \frac{\text{Get}}{\text{Give}} = \frac{15}{5} = 3
\]

d) Each country should tend toward specialization in the production of which good?

Germany Comp

Poland Grain

4. (8 points) Suppose we have the following information for a company that makes dresses. Fill in the blank columns.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Total Cost</th>
<th>Variable Cost</th>
<th>Fixed Cost</th>
<th>Marginal Cost</th>
<th>Average Total Cost</th>
<th>Average Fixed Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>300</td>
<td>0</td>
<td>300</td>
<td>-</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>1</td>
<td>350</td>
<td>50</td>
<td>300</td>
<td>50</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>2</td>
<td>390</td>
<td>90</td>
<td>300</td>
<td>40</td>
<td>195</td>
<td>195</td>
</tr>
<tr>
<td>3</td>
<td>420</td>
<td>120</td>
<td>300</td>
<td>30</td>
<td>140</td>
<td>140</td>
</tr>
<tr>
<td>4</td>
<td>450</td>
<td>150</td>
<td>300</td>
<td>25</td>
<td>112.5</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>490</td>
<td>190</td>
<td>300</td>
<td>40</td>
<td>98</td>
<td>60</td>
</tr>
</tbody>
</table>
5. (4 points) a) There are many farmers in the Northern United States who grow sugar beets. All sugar beets are basically the same and there are many buyers of the product as well. Further, anyone who wants to grow them may do so. What type of industry (market) is this?

Perfect Competition

b) Suppose you are given the following information about one such farm.

<table>
<thead>
<tr>
<th>Q (tons)</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$5,000</td>
</tr>
<tr>
<td></td>
<td>$8,000</td>
</tr>
<tr>
<td></td>
<td>$12,000</td>
</tr>
<tr>
<td>3</td>
<td>$17,000</td>
</tr>
<tr>
<td>4</td>
<td>$23,000</td>
</tr>
</tbody>
</table>

What is the profit maximizing amount of sugar beets that should be produced if the price is $6,000 per ton?

\[ P = MR = MC = \frac{6,000}{6} = 1,000 \]

\[ \text{Profit} = (6,000 - 1,000) \times 4 = 2,000 \]

d) What is the value of the Marginal Cost at the profit maximizing level?

\[ 6,000 = P = MR - MC \]

6. (4 points) a) Let us suppose that the Eli Lilly drug company discovers an instantaneous cure for the flu called Wellazin. They have a patent and therefore a monopoly. In the graph to the right, show the price they will charge and the quantity they make by \( P_M \) and \( Q_M \).

\[ \text{Operate at} \ Q_M \text{ when } MR = MC. \]

b) Suppose the government decides to take the patent away to expedite the production. Let us assume there are many drug companies and they can produce as cheaply as Lilly. Show the new price and quantity by \( P^* \) and \( Q^* \).
7. (4 points) The following table contains information about an economy that produces only pens and books. The base year is 1999. Use this information for a, b, c, and d.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of Pens</th>
<th>Quantity of Pens</th>
<th>Price of Books</th>
<th>Quantity of Books</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>$3</td>
<td>100</td>
<td>$10</td>
<td>50</td>
</tr>
<tr>
<td>2000</td>
<td>$3</td>
<td>120</td>
<td>$12</td>
<td>70</td>
</tr>
<tr>
<td>2001</td>
<td>$4</td>
<td>120</td>
<td>$14</td>
<td>70</td>
</tr>
</tbody>
</table>

a. What is the value of the nominal GDP for 2000?

\[ (3 \times 120) + (12 \times 70) = 360 + 840 = 1200 \]

b. What is the value of real GDP for 2000?

\[ (3 \times 120) + (10 \times 70) = 360 + 700 = 1060 \]

c. What is the value of the GDP deflator in 2000?

\[ \frac{Nominal \ GDP \ 2000}{Real \ GDP \ 2000} + 100 = \frac{1200}{1060} + 100 \]
\[ = 1.132 \times 100 \]
\[ = 113.2 \]

d. What is the percentage increase in real GDP from 2000 to 2001?

\[ 2001 \ Real \ GDP - 2000 \ Real \ GDP \ in \ 1999 \ Prices \]
\[ (3 \times 120) + (10 \times 70) = 360 + 700 \]
\[ = 1060 \]

(\% change. Prices changed, not production)
*8. (6 points) Use the following table for question #8. The table shows the prices and the quantities consumed in Carnivore Country. The base year is 2000.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price of Beef</th>
<th>Quantity of Beef</th>
<th>Price of Pork</th>
<th>Quantity of Pork</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>$2.00</td>
<td>100</td>
<td>$1.00</td>
<td>100</td>
</tr>
<tr>
<td>2001</td>
<td>$2.50</td>
<td>90</td>
<td>$0.90</td>
<td>120</td>
</tr>
<tr>
<td>2002</td>
<td>$2.75</td>
<td>105</td>
<td>$1.00</td>
<td>130</td>
</tr>
</tbody>
</table>

a. What are the values of the CPI in 2000, 2001, and 2002, respectively?

\[
\text{CPI}_{2000} = \frac{\left(2 \times 100\right) + \left(1 \times 100\right)}{200} = 1.00
\]

\[
\text{CPI}_{2001} = \frac{\left(2.5 \times 100\right) + \left(0.9 \times 100\right)}{250} = 1.02
\]

\[
\text{CPI}_{2002} = \frac{\left(2.75 \times 100\right) + \left(1 \times 100\right)}{275} = 1.06
\]

b. What is the inflation rate for 2001?

\[
\text{Inflation Rate} = \frac{\text{CPI}_{2001} - \text{CPI}_{2000}}{\text{CPI}_{2000}} = \frac{1.02 - 1.00}{1.00} = 0.02 = 2\%
\]

c. What is the inflation rate for 2002?

\[
\text{Inflation Rate} = \frac{\text{CPI}_{2002} - \text{CPI}_{2001}}{\text{CPI}_{2001}} = \frac{1.06 - 1.02}{1.02} = 0.04 = 4\%
\]

d. What type of bias do we see for 2002? Does it cause the rate of inflation to be higher or lower? Explain.

Substitution. As relative prices change, people adapt more quickly than beef, but our index does not reflect this. We overweight expensive goods so inflation looks higher.
9. (4 points) a) Suppose that First National Bank has deposits of $500,000, reserves of $100,000 and loans of $400,000. Draw their T-Account.

\[
\begin{array}{c|c}
\text{Assets} & \text{Liabilities} \\
\hline
\text{Reserve} \$100,000 & \text{Deposits} \$500,000 \\
\text{Loans} \$400,000 & \text{} \\
\end{array}
\]

b) If the Fed requires them to hold 5% of deposits in reserve, how much do they have as excess reserves?

\[
5\% \times \$500,000 = 25,000
\]

\[
\begin{array}{c}
\text{Reserve} \$100,000 \\
\hline
\text{Excess reserve} \$25,000 \\
\end{array}
\]

c) Assume that all other banks hold only the required amount of reserves. If First National decides to reduce its reserves to only the required amount, by how much would the economy's money supply increase?

\[
\text{Money multiplier} = \frac{1}{\text{Res. Req}} = \frac{1}{.05} = 20
\]

\[
\text{Money Multiplier} \times 75,000 = 20 \times 75,000 = 1.5 \text{ million}
\]
*10. (10 points) Use Exhibit 4 to answer the following questions.

a) If trade is not allowed, what is the equilibrium price and quantity in this market?

\[ P = 6.4 \quad Q = 40 \]

b) If trade is allowed, will this country import or export this commodity? Why?

Import as world price is lower.

c) What area corresponds to consumer surplus if trade is allowed?

\[ A + B + O + E \]

d) What area corresponds to producer surplus if trade is allowed?

\[ C \]

e) If trade is allowed, who gains and who loses, the consumers or the producers, and what area corresponds to their gain or loss?

\[ \text{Cons gain} \quad A + B + O + E \]

\[ \text{Producers lose} \quad O \]

f) What area corresponds to the gains for trade?

\[ D + E \]
11. (10 points) a) In the area to the right draw both a Long Run and Short Run Phillips Curve. LABEL the axes.

b) Does the Short Run Phillips curve touch vertical axes? Explain why or why not.

No. Always Some

c) Label the point where the curves intersect as point c. Show the impact of a cut in taxes on the short run Phillips curve.

d) Show the impact of the tax cut in the long run Phillips Curve.

Multiple Choice. 2 points each.

*12 A binding price ceiling creates
a. a shortage.
b. a surplus.
c. an equilibrium.
d. a shortage or a surplus depending on whether the price ceiling is set above or below the equilibrium price.

*13. Which of the following is true regarding the similarities and differences in monopolistic competition and monopoly?

a. Both monopolies and monopolistic competitors are illegal.
b. The monopolist makes economic profits in the long run while the monopolistic competitor makes zero economic profits in the long run.
c. Both the monopolist and the monopolistic competitor operate at the efficient scale.
d. The monopolist charges a price above marginal cost while the monopolistic competitor charges a price equal to marginal cost.

*14. In the market for real output, the initial effect of an increase in the money supply is to

a. shift aggregate demand to the right.
b. shift aggregate demand to the left.
c. shift aggregate supply to the right.
d. shift aggregate supply to the right.
*15. If actual inflation turns out to be greater than people had expected, then
   a. wealth was redistributed to lenders from borrowers.
   b. wealth was redistributed to borrowers from lenders.
   c. no redistribution occurred.
   d. the real interest rate is unaffected.

*16. If the Fed were to continuously use expansionary monetary policy in an attempt to
   hold unemployment below the natural rate, the long-run result would be
   a. an increase in the level of output.
   b. an increase in the unemployment rate.
   c. an increase in the rate of inflation.
   d. all of the above.

17. On the production possibilities frontier shown, the opportunity cost to the economy
   of getting 10 additional roller blades by moving from point A to point B is
   a. 15 bikes.
   b. 10 bikes.
   c. 5 bikes.
   d. It is impossible to know the opportunity cost without knowing the cost of the
      resources used to produce the additional roller blades.

18. You produce jewelry boxes. If the demand for jewelry boxes is elastic and you want
   to increase your total revenue, you should
   a. decrease the price of your jewelry boxes.
   b. increase the price of your jewelry boxes.
   c. not change the price of your jewelry boxes.
   d. None of the above answers are correct.

19. If the cross-price elasticity of demand is 1.25, then the two goods would be
   a. complements.
   b. luxuries.
   c. normal goods.
   d. substitutes.
20. For a competitive, profit-maximizing firm the labor demand curve equals the
a. wage curve.
b. marginal cost curve.
c. the production function.
d. the value of marginal product curve.

21. As a group, homogenous oligopolists would always be better off collectively if the would
a. limit production. 
   b. increase production. 
   c. decrease prices. 
   d. operate according to their own self-interest.

22. Marginal cost is equal to average total cost when
a. marginal cost is at its minimum.
b. average total cost is at its minimum.
c. average variable cost is falling.
d. average fixed cost is rising.

23. Suppose that in a closed economy, i.e., N-X = 0 (no net exports) GDP is equal to 10,000, taxes are equal to 2,500 Consumption equals 6,500 and Government expenditures equal 2,000. What are private saving, public saving, and national saving?
a. 1500, 1000, 500
b. 1000, 500, 1500
b. 500, 1500, 1000
d. None of the above are correct.

24. Curtis is a stockbroker. He has had several job offers, but he has turned them down because he thinks he can find a firm that better matches his tastes and skills. John is an accountant. He has looked for work for some time, but no accounting firms are hiring, only stockbrokers are being hired in his town.
a. John and Curtis are both frictionally unemployed.
b. John and Curtis are both structurally unemployed.
c. Curtis is frictionally unemployed, and John is structurally unemployed.
d. Curtis is structurally unemployed, and John is frictionally unemployed.

25. Assume that the MPC is 0.75. Assuming only the multiplier effect matters, an increase in government purchases of $200 billion will shift the aggregate demand curve
a. left by $150 billion.
b. left by $200 billion.
c. right by $800 billion.
d. None of the above are correct.
26. As the price level decreases, the value of money
   a. increases, so people want to hold more of it.
   b. increases, so people want to hold less of it.
   c. decreases, so people want to hold more of it.
   d. decreases, so people want to hold less of it.

27. An increase in the expected rate of inflation shifts.
   a. only the short-run Phillips curve right.
   b. only the short-run Phillips curve left.
   c. both the short-run and long-run Phillips curve to the right.
   d. both the short-run and long-run Phillips curve to the left.

28. Suppose an economy with high inflation decides to decrease the money supply growth rate.
   b. Initially unemployment rises. Eventually the short-run Phillips curve shifts left.
   c. Initially unemployment falls. Eventually the short-run Phillips curve shifts right.
   d. Initially unemployment falls. Eventually the short-run Phillips curve shifts left.

29. Which of the following is an argument for restricting trade?
   a. Trade restrictions make all Americans better off.
   b. Trade restrictions increase economic efficiency.
   c. Trade restrictions are necessary for economic growth.
   d. Trade restrictions are sometimes necessary for national security

30. Denmark is an importer of computer chips and is also a price-taker in the chip market. The
    world price of these computer chips is $12. If Denmark imposes a $5 tariff on chips, the
    result in Denmark would be that consumers
   a. and producers will both gain.
   b. and producers will both lose.
   c. will gain and producers will lose.
   d. will lose and producers will gain.

31. About what percentage of GDP are U.S. imports?
   a. less than 1 percent.
   b. about 4 percent
   c. about 7 percent
   d. over 10 percent

32. Extra credit (Zero or one absence and answered correctly.)
Suppose the government wants to increase its spending. Cite the three ways it can get the
  funds.
   - Print $\text{[answer]}$
   - Take $\text{[answer]}$
   - Borrow $\text{[answer]}$