1. (4 points) Milk is used to make the drink cappuccino. Suppose the price of milk rises. Show the impact on the market for cappuccino due to the increase in the price of milk. Show any shifts in the graph AND fill in the blanks below with "up", "down" or "no change". Label the axis of the graph and the curve.

\[ \text{L} \quad \text{Supply} \quad \text{P} \quad \text{Price} \]
\[ \text{A} \quad \Delta \text{ Demand} \quad \text{Q} \quad \text{Quantity} \]

2. (4 points) Suppose you are given the following information about good X and good Y.

<table>
<thead>
<tr>
<th>Price X</th>
<th>Quantity X</th>
<th>Quantity Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>$8</td>
<td>60</td>
<td>25</td>
</tr>
</tbody>
</table>

a) Calculate the elasticity of demand for good X.

\[ \varepsilon = \frac{\frac{\Delta Q_x}{Q_x}}{\frac{\Delta P_x}{P_x}} = \frac{\frac{20}{40}}{\frac{2}{10}} = \frac{5}{2} = 2.5 \]

b) Is the demand for X elastic or inelastic? How can you tell?

\[ 2.5 > 1 \quad \varepsilon \text{ is elastic} \]

c) Calculate the cross elasticity of demand for Good Y with respect to X.

\[ \varepsilon_{xy} = \frac{\frac{\Delta Q_y}{Q_y}}{\frac{\Delta P_x}{P_x}} = \frac{-16.75}{-2.0} = 8.3 \]

d) Are X & Y companions, substitutes or neither? How can you tell?

\[ \text{Sophysical Relationship} \quad P_x \perp Q_y \quad \text{Cross - elastic} > 0 \]
3. (5 points) Suppose Royal is a fisherman who catches bass. The market for bass is perfectly competitive and the price is $9/pound. His cost structure is given below.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Total Revenue</th>
<th>Total Cost</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>$10</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>$14</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>$19</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>27</td>
<td>$25</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>$32</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>45</td>
<td>$40</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>54</td>
<td>$49</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>63</td>
<td>$59</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>72</td>
<td>$70</td>
<td>11</td>
</tr>
</tbody>
</table>

a) Calculate his total revenue and fill in the column.

\[ T = Q \times P \]

\[ 9 \times Q \]

b) Calculate his fixed cost.

\[ TC = F \] when \( Q = 0 \)

\[ F = \text{Fixed Cost} = 10 \]

c) Calculate his Marginal Cost and fill in the column.

\[ ATC = \frac{TC}{Q} \]

\[ MC = \frac{\text{Change in Total Cost}}{\text{Change in Quantity}} \]

\[ MC = \frac{\Delta TC}{\Delta Q} \]

d) At a price of $9, what quantity will maximize his profit?

\[ MR = MC \]

\[ Q = 10 \text{ (approx.)} \]

\[ \pi = TR - TC \]

\[ \pi = 90 - 10 = 80 \]

e) How much profit will he make?

\[ \pi = \text{Profit} = 80 \]

4. (2 points) Suppose a drug company holds a patent for the new miracle drug Placebo. They have a legal monopoly. Show the price they would charge and the quantity they would bring to market in the space to the right.

\[ MR = MC \]

\[ Q = 60 \text{ (approx.)} \]

\[ P = 2.5 \text{ (approx.)} \]
5. (3 points) Suppose we look at what consumers bought in 2005 and 2006 as well as the prices of the goods.

<table>
<thead>
<tr>
<th>Year</th>
<th>Q_COFFEE</th>
<th>P_COFFEE</th>
<th>Q_CAKE</th>
<th>P_CAKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>70</td>
<td>$1.00</td>
<td>10</td>
<td>$1.75</td>
</tr>
<tr>
<td>2006</td>
<td>50</td>
<td>$1.50</td>
<td>15</td>
<td>$2</td>
</tr>
</tbody>
</table>

a) Use 2005 as the base year. What is the value of the price index in 2005?

\[
\text{Price Index}_{2005} = \left( \frac{\text{Cost of Goods in 2005}}{\text{Cost of Goods in 2005} + \text{Cost of Goods in 2006}} \right) \times 100
\]

b) Use 2005 as the base year. What is the value of the price index in 2006?

\[
\text{Price Index}_{2006} = \left( \frac{\text{Cost of Goods in 2006}}{\text{Cost of Goods in 2005} + \text{Cost of Goods in 2006}} \right) \times 100
\]

c) What is the inflation rate in 2006?

\[
\text{Inflation Rate}_{2006} = \left( \frac{\text{Cost of Goods in 2006} - \text{Cost of Goods in 2005}}{\text{Cost of Goods in 2005}} \right) \times 100
\]

6. (5 points) a) Draw a simple T-account for Manufacturer's National Bank, which has $5,000 of deposits, a reserve ratio of 10% and no excess reserves. Label all the values.

b) Show the impact of the Fed selling $100 of bonds to a person with an account at Manufacturer's. Cross out old values and write in new values. Assume the money comes from the person's checking account.

c) Did this increase or decrease the money supply? Explain.
7. (12 points) a) In the space to the right draw the long run aggregate supply (LRAS), short run aggregate supply (SRAS) and aggregate demand curves. Show them in long-run equilibrium. LABEL THE AXES.

b) Look at the SRAS. Cite one factor that gives it its slope. Explain in a sentence. 

Sticky wages: wages adjust slowly especially if they are falling. As prices fall, wages don't rise quickly. Firms can sell more.

Sticky prices: menu costs. It is sometimes costly to change prices. Once set, firms don't change quickly so lower relative prices aren't sold more.

c) Look at AD. Cite one factor that gives it its slope. Explain in a sentence.

- Interest rate effect: when prices are low, value of money is high. People feel wealthier and can buy more.
- Exchange rate effect: when interest rates fall, US dollars are more valuable. Domestic goods are purchased more. Similarly, LRAS could shift to the right.

More labor, better technology, more capital, natural resources.

d) What is one factor that could cause the LRAS to shift to the right?

More labor, better technology, more capital, natural resources.

c) Show the impact in the short run of an increase in the money supply. Label any changes with the number "2" on a curve that shifts. As money supply increases, AD expands.

f) What happened to unemployment?

unemployment decreases.

g) Which curve will shift to restore long run equilibrium?

SRAS

h) Show the shift you mentioned in part g. Labelled as SRAS2

b) Misperceptions: Firms don't realize all prices have changed. Wrongly believe only their prices changed. So offer more when overall prices rise.

2
8. (10 points) Suppose we have an economy with no exports and imports and:

\[
\begin{align*}
\text{Cons} & = 200 \\
\text{Gov't} & = 50 \\
\text{Inv} & = 30 \\
\end{align*}
\]

and the MPC = 0.75

a) Calculate the GDP
\[
GDP = C + I + T + G
\]

b) Suppose government spending rises by 5. What type of policy is this?
\[
\text{Fiscal}^{-}\text{policy}
\]

c) What is the numerical value of the multiplier?
\[
\frac{1}{1 - 0.75} = \frac{1}{0.25} = 4
\]

d) Assuming there is no crowding out, calculate the new value of GDP.
\[
5 + 4 = 20 \text{ for} 5^2
\]

e) Assuming there is no crowding out, calculate the new level of consumption.
\[
\text{MPC} \times \Delta G = 0.75 \times 30 = 22.5 \text{ for} C_{20}
\]

f) What is crowding out?

When the government borrowing increases, it decreases the money supply which increases interest rates and causes investment and consumption to fall.

If crowding out did exist, would your answer in part d be higher or lower? EXPLAIN.
\[
\text{Lower G, but C and Inv would not be less}
\]
9. (14 POINTS) a) In the space to the right draw the short run Phillips curve. LABEL THE AXES.

< Diagram of short run Phillips curve >

b) In the space to the right draw the long run Phillips curve. LABEL THE AXES.

< Diagram of long run Phillips curve >

c) Does the short run Phillips curve touch the vertical axes? Why or why not?

There is always some (structural and frictional) unemployment.

d) Suppose taxes are cut. What impact will this have on aggregate demand?

\[ AD = C + I + G + (M - Y) \]

e) Either by movement along the curve or a shift in the curve, show the impact of the tax cut on the short run Phillips curve.

f) Either by movement along the curve or a shift in the curve, show the impact of the tax cut on the long run Phillips curve.

g) What does the point on the horizontal axis of the long run Phillips curve represent?

Full employment, level of unemployment

Natural rate of unemployment
10. (11 points) (My father used to say when your mind is on something, you see it everywhere. This week I exchanged e-mails with a woman in Southern Mexico. The problem reflects what is happening. This econ stuff really is fun!)

In the space to the right draw a supply and demand curve for corn in Mexico. Any normally shaped supply and demand curve will do. Let us assume there is no international trade in corn. Label the equilibrium price as 10 pesos. (The peso is the currency of Mexico.)

a) Show the consumer surplus. See A

b) Show the producer surplus. See B

NAFTA, the North American Free Trade Agreement, allowed less expensive United States corn to come to Mexico. Suppose the price of corn from the U.S. is five pesos.

c) Show the equilibrium price. @ 5 pesos

d) Show the quantity consumed. Qc (People buy more at Pcorn = 5)

e) Show the quantity produced by Mexico. Qp

f) Would Mexico import or export corn? Import

g) Has consumer surplus in Mexico increased, decreased or stayed the same? Increased. (Now area with dots)

h) Has producer surplus increased, decreased, or stayed the same? Decreased (Shade area)

i) Has TOTAL surplus increased, decreased or stayed the same? Increased from A to A + B + C + D

j) The women I was corresponding with said many farmers in Southern Mexico had to sell their farms. Is this consistent with the example here? Explain.
Multiple Choice. (1 point each)

11. A binding price ceiling will make it necessary to
   a. supply more of the product.  
   b. develop a way of rationing the product, because there will be shortage.  
   c. develop a better marketing plan, because there will be a surplus.  
   d. increase demand for the product, because there will be a surplus.

12. According to the graph shown, if the government imposes a binding price floor of $6.00 in this market, the result would be
   a. a surplus of 15.  
   b. a surplus of 35.  
   c. a shortage of 30.  
   d. a shortage of 50.

This table refers to five possible buyers' willingness to pay for Good Z.

<table>
<thead>
<tr>
<th>Buyer</th>
<th>Willingness to Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassie</td>
<td>$8.50</td>
</tr>
<tr>
<td>Jamie</td>
<td>$7.00</td>
</tr>
<tr>
<td>John</td>
<td>$5.50</td>
</tr>
<tr>
<td>Jeremy</td>
<td>$4.00</td>
</tr>
<tr>
<td>Sarah</td>
<td>$3.50</td>
</tr>
</tbody>
</table>

13. Refer to the table shown. If the market price is $5.50, the consumer surplus in the market will be
   a. $3.00.  
   b. $4.50.  
   c. $15.50.  
   d. $21.00.
14. In the production possibilities frontier shown, what is the opportunity cost to society of the movement from point D to point B?
   a. 750 pretzels
   b. 500 pretzels
   c. 250 pretzels
   d. 150 pretzels

15. 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.

16. Angelo is a wholesale meatball distributor. He sells his meatballs to all the finest Italian restaurants in town. Nobody can make meatballs like Angelo. As a result, his is the only business in town that sells meatballs to restaurants. Assuming that Angelo is maximizing his profit, which of the following statements is true?
   a. Meatball prices will exceed marginal cost.
   b. Meatball prices will equal marginal cost.
   c. Meatball prices will be less than marginal cost.
   d. Meatball prices will be a function of supply and demand and will therefore move around marginal costs.

17. If firms in a monopolistically competitive industry are making profits,
   a. firms will likely be subject to regulation.
   b. barriers to entry will be strengthened.
   c. new firms will enter the market.
   d. some firms must exit the market.

18. The value of the marginal product curve gets its shape from
   a. diminishing marginal product.
   b. increasing marginal product.
   c. tight labor markets.
   d. a surplus of workers.
19. If the Value of the Marginal Product exceeds the wage, hiring another worker would be
   a. profitable.
   b. unprofitable.
   c. either profitable or unprofitable depending on other circumstances.
   d. nearly impossible due to shortage in the supply of labor.

20. After the terrorist attack on September 11, governments raised expenditures to increase
    security at airports. These purchases of goods and services are
   a. not included in GDP since they are not productive.
   b. not included in GDP since the government will have to raise taxes to pay for them.
   c. included in GDP since government expenditures are included in GDP.
   d. included in GDP only to the extent that the Federal, and not state or local governments,
      paid for them.

21. Ralph pays someone to mow his lawn. Norton mows his own lawn.
   a. Only what Ralph pays to have his lawn mowed is included in GDP.
   b. What Ralph pays to have his lawn mowed and the estimated value of Norton’s mowing
      his own lawn are both included in GDP.
   c. Neither what Ralph pays nor the estimated value of Norton’s mowing is included in
      GDP.
   d. The answer depends on what Norton reports to survey takers.

22. Other things equal, relatively poor countries tend to grow
   a. slower than relatively rich countries; this is called the poverty trap.
   b. slower than relatively rich countries; this is called the Malthus effect.
   c. faster than relatively rich countries; this is called the catch-up effect.
   d. faster than relatively rich countries; this is called the constant-returns-to-scale effect.

23. Anna has just finished school and started looking for a job, but has not yet found one. As a
    result, the unemployment rate
   a. increases, and the labor-force participation rate is unaffected.
   b. increases, and the labor-force participation rate increases.
   c. is unaffected, and the labor-force participation rate increases.
   d. increases, and the labor-force participation rate decreases.

24. When the Fed decreases the discount rate, banks will borrow more from the Fed, lend
   a. more to the public, and so the money supply will increase.
   b. less to the public, and so the money supply will decrease.
   c. more to the public, and so the money supply will increase.
   d. less to the public, and so the money supply will increase.

25. Which of the following shifts aggregate demand to the left?
   a. an increase in the price level
   b. a decrease in the money supply
   c. an increase in net exports
   d. an investment tax credit (a tax break for investing)
26. Which of the following shifts short-run aggregate supply right?
   a. an increase in the price level
   b. an increase in the minimum wage
   c. a decrease in the price of oil
   d. a decrease in immigration from abroad.

27. Keynes believed that economies experiencing high unemployment should adopt policies to
   a. reduce the money supply.
   b. reduce government expenditures.
   c. increase aggregate demand.
   d. increase aggregate supply.

28. If the reserve ratio is 10 percent, $1,000 of excess reserves can create
   a. $100 of new money.
   b. $1,000 of new money.
   c. $10,000 of new money.
   d. None of the above are correct.

29. The Fed can increase the money supply by conducting open market
   a. sales and raising the discount rate.
   b. sales and lowering the discount rate.
   c. purchases and raising the discount rate.
   d. purchases and lowering the discount rate.

30. According to the theory of liquidity preference, the money supply is
   a. positively related to the interest rate.
   b. negatively related to the interest rate.
   c. independent of the interest rate.
   d. negatively related to both the interest rate and the price level.

31. If taxes
   a. increase, consumption increases, aggregate demand shifts right.
   b. increase, consumption decreases, aggregate demand shifts left.
   c. decrease, consumption increases, aggregate demand shifts left.
   d. decrease, consumption decreases, aggregate demand shifts right.

32. During recessions, automatic stabilizers tend to make the government's budget
   a. move toward deficit.
   b. move toward surplus.
   c. move toward balance.
   d. not necessarily move the budget in any particular direction.

33. There is a
   a. short-run tradeoff between inflation and unemployment.
   b. short-run tradeoff between the actual unemployment rate and the natural rate of unemployment.
   c. long-run tradeoff between inflation and unemployment.
   d. long-run tradeoff between the actual unemployment rate and the natural rate of unemployment.
34. 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 curves to the right.
   d. both the short-run and long-run Phillips curves to the left.

35. According to Friedman and Phelps, the unemployment rate is below the natural rate when
   actual inflation
   a. is greater than expected inflation.
   b. is less than expected inflation.
   c. equals expected inflation.
   d. is low.

36. If Haiti has a comparative advantage in producing sugar, and trade in sugar is allowed,
   a. Haiti will become an importer of sugar.
   b. Haiti will become an exporter of sugar.
   c. Haiti could become either an exporter or an importer of sugar.
   d. it is impossible to determine whether Haiti will become an importer or an exporter of
      sugar without additional information about sugar prices.

37. When the United States engages in international trade with China,
   b. both China and the United States reap economic benefits.
   c. it is an equal tradeoff so neither country benefits nor loses.
   d. China loses and the United States reaps economic benefits.

Extra Credit. Less than two absences in this part of the course.

An economist said that sometimes the economy will take too long to correct itself. The
government needs to spend money to increase Aggregate Demand, perhaps even hiring people to
bury jars in the desert and others to dig them up. Who was the famous economist who said this?
(Last name is enough.)