1. a) When people's incomes rise from $18,000 to $22,000 a year, their annual purchases of oranges rise from 78 to 82. What is the income elasticity of demand?

   b) When the price of a box of herbal teabags rises from $0.99 to $1.21, the quantity offered for sale rises from 400,000 to 600,000. What is the price elasticity of supply?

   c) When the price of wheat rises from $2.34 to $2.46, some farmers switch crops, and the amount of barley offered on the market falls from 101 million bushels to 99 million. What is the cross elasticity of supply?

   d) When the wage rate rises from $6.25 an hour to $6.75 an hour, employment in Fastfood, Inc. falls from 5,100 to 4,900. What is the wage elasticity of employment?

   (20%)

2. Mr. White is a monopolist who, through a combination of good products, friendly service, and occasional acts of grisly violence maintains effective barriers to entry. He has two types of customers (pink customers and orange customers), which he can easily identify. They have the following demand schedules (pay close attention to the changes in quantity at each price). Assume these prices and quantities represent all the choices the consumers have (for example, don't try to extrapolate quantities demanded at a price of $5.50). Hint: remember that marginal revenue is the change in total revenue divided by the change in quantity.

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity (pink)</th>
<th>Quantity (orange)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
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<tr>
<td>4</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

   a) If Mr. White has constant marginal costs of $3 and sunk fixed costs of $36.50, what will be his profit if he price discriminates?

   b) The government decides that Mr. White should not be allowed to price discriminate and effectively prevents him from doing so. What does Mr. White do in the short run and in the long run if he cannot price discriminate?

   (20%)
3. Most people insist upon having some form of health insurance. And yet when they have health insurance, they have an incentive to use more medical care than they really need, since the private marginal costs are much lower than the social marginal costs. This is one of the reasons for the crisis in health care in the United States today. Can you think of any ways to alleviate this problem?

(10%)

4. Although Microsoft Windows is currently the dominant personal computer operating system, some new competitors such as Sun Microsystems’ Java and Linux have begun to emerge. The Linux operating system has experienced rapid growth, largely due to the developer’s decision to freely share the source code with the world and permit software developers to make their own enhancements and modifications to the Linux operating system. This is an example of technology trading or cross licensing where no explicit fee has been paid to Linux. Why do you think Linux chose this strategy? Do you think it will be successful in the short run? In the long run?

(10%)

5. On Sept. 3, 2006, Premier Su Tseng-Chang announced the implementation of an “Economic Development Vision for 2015” program. The program’s target is to boost Taiwan’s per capita income from US$15,000 in 2005 to US$20,000 in 2009 and US$30,000 in 2015. Why this is an unrealistic program? For the program to be realistic, how much an average annual economic growth rate and population growth rate should Taiwan be able to achieve in these years?

(20%)
6. Economists in Macroland believe that the full employment GDP is 7,500, and they calculate the structural deficit at that level. In 2005, the economy was described as follows:

\[
Y = C + I + G + (X - IM)
\]
\[
C = 100 + 0.8 DI
\]
\[
DI = Y - T
\]
\[
T = 0.25Y
\]
\[
I = 800
\]
\[
G = 1700
\]
\[
(X - IM) = 0
\]

a) What was the equilibrium GDP in 2005?
b) What was the multiplier?
c) What was the government’s surplus or deficit?
d) What was the structural surplus or deficit?
e) The government decided to move the economy to full employment in 2006, a year in which the above structure of the economy did not change, except for G. What change in G was necessary?
f) What was the government’s surplus or deficit in 2006?
g) Does a comparison of the government’s actual surpluses or deficits in 2005 and 2006 give a good indication of the change in fiscal policy? Why or why not?
h) Compare the structural deficits in the two years. What does this comparison tell you about fiscal policy?
i) Use a diagram to show what has happened to GDP, the actual deficit and the structural deficit.

(20%)