1. Draw the circular flow diagram for the US, carefully labeling the markets, sectors and money flows. Suppose we have the following information about economic activity in the US during the year: Aggregate income is $200, consumption is $140, government spending on goods and services is $25, net exports from the US are $5 and net taxes paid to government are $25. Given this information, compute household saving (S), national saving, gross investment (I) and GDP.

\[
GDP = Y = $200 \\
S = Y - C - T = 200 - 140 - 25 = $35 \\
S_n = S + (T - G) = $35 \\
I = S_n - NX = 35 - 5 = $30
\]

2. How would each of the following transactions during the year 2005 contribute to US GDP in that year? Be sure to note the appropriate circular flow category in which the transaction should appear, if any.
   a) You rent a hotel room in Paris. *(No effect on US GDP; increases imports)*
   b) A French visitor buys a meal in Atlanta. *(Increase US GDP; increase in NX)*
   c) You buy a new house in Athens. *(Increase GDP; increase in investment – residential investment)*
   d) You purchase an iPod from Circuit City. *(Increase in GDP, consumption)*
   e) During 2005, Ford produces $10 million worth of trucks that are not sold by the end of the year. *(Increase in GDP, inventory investment)*
   f) A road is built and paid for by the federal government. *(Increase in GDP, government expenditures)*
   g) You buy an old copy of *The Wealth of Nations* from the local used book store. *(Only the value-added by the book seller will be included in GDP. Consumption will rise by the full value of the sale, inventory investment will fall by the wholesale value of the book (what the bookseller paid for it).)*
   h) Your employer increases his annual contribution to your pension fund. *(Ceteris paribus, this increase in aggregate income will reflect an increase in overall production.)*

3. A hypothetical economy produces three goods: A, B and C. Economists have obtained the following information regarding production (Q in units) and market prices (P in $ per unit) for these goods for the years 2000 and 2005:

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<tr>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
<td>50</td>
<td>110</td>
<td>50</td>
</tr>
<tr>
<td>B</td>
<td>160</td>
<td>40</td>
<td>176</td>
<td>44</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
<td>10</td>
<td>220</td>
<td>12</td>
</tr>
</tbody>
</table>
For this economy, compute nominal GDP in 2000 and 2005, real GDP in 2005 (using 2000 as the base year), and the GDP deflator in 2000 and 2005. What is the rate at which aggregate production has increased in this economy from 2000 to 2005?

\[
\begin{align*}
GDP \text{ in } 2000 & = 5000 + 6400 + 2000 = $13,400 \\
GDP \text{ in } 2005 & = 5500 + 7744 + 2640 = $15,884 \\
Real \ GDP \text{ in } 2005 & = 5500 + 7040 + 2200 = $14,740 \\
GDP \text{ deflator in } 2000 & = 1.0 \\
GDP \text{ deflator in } 2005 & = 15,884/14,740 = 1.078 \\
Real \ GDP \text{ growth rate} & = (14,740 – 13,400)/13,400 = 10\% \text{ (roughly } 2\% \text{ per annually)}
\end{align*}
\]

4. In the same economy, a typical consumer buys 10 units of good X, 15 units of good Y, and 20 units of service Z during the year. These goods sold at the following prices ($ per unit) during the years 2003, 2004, and 2005, assuming the base year is 2003:

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>5.0</td>
<td>5.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Y</td>
<td>4.0</td>
<td>4.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Z</td>
<td>8.0</td>
<td>8.0</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Compute and report the economy’s CPI for each of these three years. As measured by the CPI, what was the annual rate of inflation in 2004 and 2005?

\[
\begin{align*}
Market \text{ value of basket in } 2003 & = 50 + 60 + 160 = 270 \\
Market \text{ value of basket in } 2004 & = 51 + 63 + 160 = 274 \\
Market \text{ value of basket in } 2005 & = 51 + 66 + 166 = 283 \\
CPI \text{ in } 2003 & = 1 \text{ (base year)} \\
CPI \text{ in } 2004 & = 274/270 = 1.015 \\
CPI \text{ in } 2005 & = 283/270 = 1.048 \\
Annual \text{ inflation from } 2003 \text{ to } 2004 & = 1.5\% \\
Annual \text{ inflation from } 2004 \text{ to } 2005 & = (1.048 – 1.015)/1.015 = .033 = 3.3\%
\end{align*}
\]

5. Suppose that Publix runs the following advertisement in the local paper: “We measured what the average Publix shopper bought last week, and that same basket of groceries would have cost 3% more at Kroger.” The same newspaper also contains an ad from Kroger: “We measured what the average Kroger shopper bought last week, and that same basket of groceries would have cost 3% more at Publix.” Neither grocery chain is lying. What is the likely explanation for this paradoxical result? How is this example related to the bias in the CPI?