**Week of September 9, 2007 – September 13, 2007**

*Example 1*
Your roommate has a budget to purchase two different clothes for the start of the semester, T-shirts (T) and sweaters (S). The budget is completely exhausted if 3 sweaters and 5 T-shirts are purchased or if 6 sweaters and no T-shirts are purchased. Each T-shirts is 15 dollars.

(i) Graph your roommate’s budget for sweaters (S) and T-shirts (T).

![Graph of budget](image)

(ii) How much does your roommate have to spend on T-shirts and sweaters this semester?  
$150

(iii) How many T-shirts can be purchased if your roommate decides to not buy a sweater and brave the harsh winter?  
10

(iv) What is the price of a sweater?  
25

(v) What is the equation that characterizes your roommate’s budget?  
$$15T + 25S = 150$$

Your roommate’s best friend from high school goes to Yale University and the price of T-Shirts and sweaters are $10 and $30 respectively. Your roommate’s best friend has $140 to spend on clothing.

(vi) What is the equation that characterizes your roommate’s best friend’s budget?  
$$10T + 30S = 140$$

(vii) Your roommate and their best friend want to coordinate what they wear each day and want to buy as much as possible as long as the same number of T-shirts and sweaters are purchased. How many T-Shirts and Sweaters will be purchased?  
3 Sweaters and 5 T-Shirts

*Example 2*
Wisconsin and California each can produce only 2 drinks: milk and wine. If Wisconsin chooses to produce only milk it will produce 10 gallons. If Wisconsin produces wine, for each gallon of wine it costs 2 gallons of milk. California can produce 4 gallons of wine, but must give up 2 gallons of wine for each gallon of milk produced.
(i) Graph the production possibility frontiers for the two states.

![Graph of production possibility frontiers for Wisconsin and California](image)

(ii) What is the opportunity cost of producing milk in Wisconsin? What is the opportunity cost of producing milk in California?

- **Wisconsin** – (5/10) 1/2 gallons of wine
- **California** – (4/2) 2 gallons of wine

(iii) Who has the comparative advantage in the production of milk?

**Wisconsin has the comparative advantage in milk, California in wine.**

(iii) Who has the absolute advantage in the production of each drink?

**Wisconsin has the absolute advantage in milk and wine.**

(v) If the states were to trade with each other, which drink should Wisconsin import from California?

**Wisconsin should import Wine from California.**

**Example 3**

The local farmer is trying to decide what to plant on their land, beets and soybeans. You know the farmer is limited in their production according to the following table.

<table>
<thead>
<tr>
<th>Beets</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>80</td>
<td>30</td>
</tr>
<tr>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>40</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>90</td>
</tr>
<tr>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

(i) Graph the farmer’s production possibility frontier. Is it linear?

**No, it bulges out.**

(ii) What could explain this shape?

**Some of the land is better suited for only Beets, and some for only soybeans.**

**Increasing Opportunity Costs.**