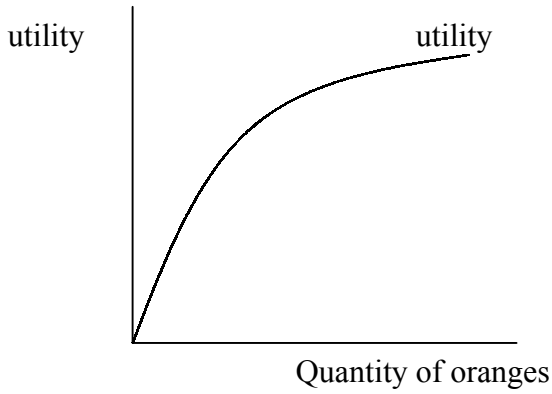
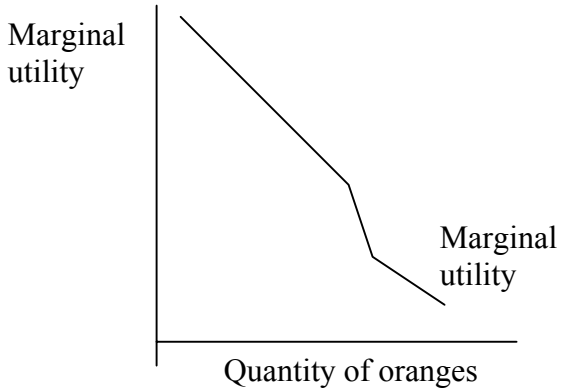
Answers to problems from Chapter 5:

1.

Number of Oranges	Utility	Marginal Utility
1	11	11
2	21	10
3	30	9
4	38	8
5	45	7
6	48	3
7	50	2
8	51	1





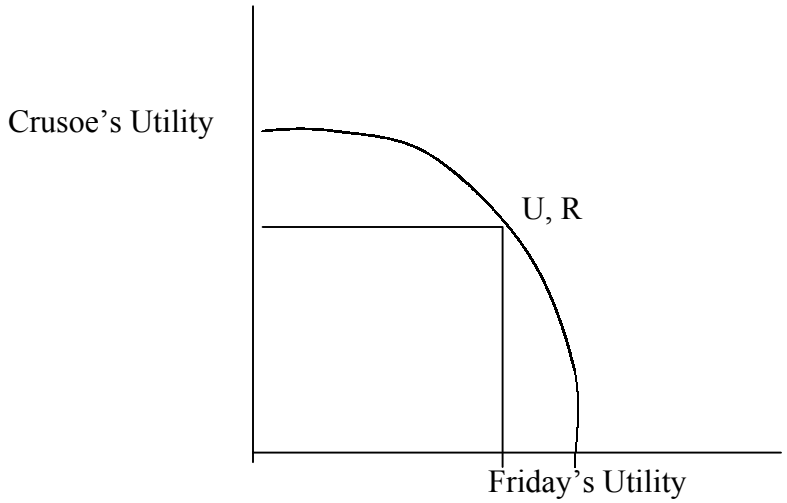
2. A utilitarian welfare function maximizes total utility. If there are 8 oranges to be divided between Crusoe and Friday, the social welfare function chooses to allocate 4 oranges to each. At this point, the marginal utility of an extra orange to either person is 7.

3. The table below gives social welfare for each possible distribution when a Rawlsian function is used.

Crusoe's Oranges	Friday's Oranges	Social Welfare
8	0	0
7	1	11
6	2	21
5	3	30
4	4	38
3	5	30
2	6	21
1	7	11
0	8	0

Social welfare is maximized when the most disadvantaged person has as much as possible. In this example, that means each person has 4 oranges.

4. Both Rawlsian and Utilitarian social welfare functions are maximized at the point where both Friday and Crusoe have utility of 38.



Friday's Utility	Crusoe's Utility
51	0
50	11
48	21
45	30
38	38
30	45
21	48
11	50
0	51

5. If, for every 2 oranges taken from Crusoe, only 1 gets to Friday, the new utility possibilities schedule is given in the second pair of columns below:

Friday's Oranges	Crusoe's Oranges	Friday's Utility	Crusoe's Utility
2	6	21	48
3	4	30	38
4	2	38	21
5	0	45	0

Under a utilitarian social welfare function, the preferred allocation is 6 oranges for Crusoe and 2 for Friday.
Under a rawlsian social welfare function, the preferred distribution is 4 oranges for Crusoe and 3 for Friday.

6. If marginal utility was not decreasing, the utility possibilities schedule would be a straight line.