

## Homework 6

Due: Monday, November 10 (if turned in on paper I need to have by Monday 6pm, if you scan your work and send it by email due time is 11:59pm)

For each of the following problems, transform it into a Linear Programming problem and determine the solution **graphically**.

1. Michigan Polar Products makes downhill and cross-country skis. A pair of downhill skis requires 2 man-hours for cutting, 1 man-hour for shaping and 3 man-hours for finishing while a pair of cross-country skis requires 2 man-hours for cutting, 2 man-hours for shaping and 1 man-hour for finishing. Each day the company has available 140 man-hours for cutting, 120 man-hours for shaping and 150 man-hours for finishing. How many pairs of each type of ski should the company manufacture each day in order to maximize profit if a pair of downhill skis yields a profit of \$10 and a pair of cross-country skis yields a profit of \$8?
2. A dietitian wants to design a breakfast menu for certain hospital patients. The menu is to include two items A and B. Suppose that each ounce of A provides 2 units of vitamin C and 2 units of iron and each ounce of B provides 1 unit of vitamin C and 2 units of iron. Suppose the cost of A is 4 cents per ounce and the cost of B is 3 cents per ounce. If the breakfast menu must provide at least 8 units of vitamin C and 10 units of iron, how many ounces of each item should be provided in order to meet the iron and vitamin C requirements for the least cost? What will this breakfast cost?