Homework no 2

1. Suppose that the firm has two possible activities to produce output. Activity a uses a1 units of good 1 and a2 units of good 2 to produce 1 unit of output. Activity b uses b1 units of good 1 and b2 units of good 2 to produce 1 unit of output. Factors can only be used in these fixed proportions. If the factor prices are (w1, w2), what is the cost function for this technology?
2. The prices of inputs (x1, x2, x3, x4) are (4, 1, 3, 3).
   a. If the production function is given by f(x1, x2, x3, x4)=min{x1, x2}+min{x3, x4}, what is the minimum cost of producing one unit of output?
   b. If the production function is given by f(x1, x2, x3, x4)=min{x1+x2, x3+x4}, what is the minimum cost of producing one unit of output?
3. Irma's Handicrafts produces plastic deer for lawn ornaments. "It's hard work", says Irma, "buy anything to make a buck". Her production function is given by $f(x1, x2)=(min\{x1, 2*x2\})^{0.5}$, where x1 is the amount of plastic used, x2 is the amount of labor used, and f(x1, x2) is the number of deer produced.
   a. Draw a production isoquant representing input combinations that will produce 4 deer.
   b. Does this production function exhibit increasing, decreasing, or constant returns to scale?
   c. At the factor prices (w1, w2), the cost of producing y deer with this technology is c(w1, w2, y)= ?
4. A given firm has the following production technology, i.e., $f(x1, x2)=(2*x1+x2)^{0.5}$. At the factor prices (3,1), what is the minimal cost of producing y units of output?