

Do not write your name on the assignment. Write your name only on the back of this sheet of paper and staple your answers on the front of this sheet of paper. Your assignment will be typed, except graphs can be drawn by hand and mathematical equations can be done by hand. Failure to follow these directions will cost you 1 point on the assignment.

1) (30 points) Suppose the utility you get from cards (C), dice (D) and photographs (P) is given by  $U(C, D, P) = C^{1/4}D^{1/2}P^{1/4}$ . You have \$70 to spend. If cards cost \$1, dice cost \$1, and photographs cost \$20, then how many of each will you buy? Show all work. (This is basically the same question as #3 on the previous assignment, except the budget has been changed.)

4) (20 points) Suppose the production function is given by  $Q = (KL^2)^{1/3}$ . If you wanted to produce as much as possible for \$18 and capital costs \$1/K and labor costs \$2/L, then how much could you produce? Show all work.

5) (20 points) Suppose that your production function is given by  $Q = (KL^2)^{1/3}$ . If capital costs \$1/K and labor costs \$2/L, and you wanted to produce 6 units, how much capital and how much labor would you use? Show all work.

6) (10 points each) For each of the following functions, determine if it is a valid utility function. If it is not, prove it is not. If it is, prove it is.

A)  $U = C^{1/2} * B^{2/3}$

B)  $U = 1/(D * E)$

C)  $U = 4F^{1/3} * G^{1/3}$