Mathematics for Business I

 1^{st} G.A.D.E., Academic Year 2011/12

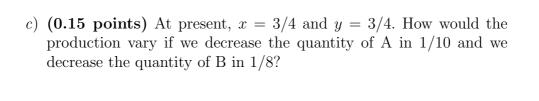
Control Unit 3 (Option B)

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You must write your answers in this sheet. They must be <u>just the final answers</u>, you mustn't write your calculations on this sheet. Use the other sheet for you calculations; you must give the lecturer that sheet also, although it won't be taken into account.

- 1. Let $Q(x,y) = (x-1/4)^{1/2}(y-1/4)^{1/2}$ a production function measuring the quantity produced of a good depending on the quantities x and y of two inputs A and B.
 - a) (0.1 points) Calculate both marginal productivities at any point (x, y).

b) (0.15 points) At present, x = 3/4 and y = 3/4. If you want to increase the production and you can only increase one of the inputs, which one would you suggest to increase its quantity and why?



- d) (0.15 points) At present, x = 3/4 and y = 3/4. Calculate how should the quantity of B change if we want to decrease the quantity of A in 1/4 units, keeping the production at the same level.
- e) (0.15 points) At present, x = 3/4 and y = 3/4. Calculate how an increase of 1% in the quantity of B would affect the production.
- f) (0.1 points) Is Q is an homogeneous function? If so, say what kind of returns (increasing, decreasing or constant) has Q, and explain what it means.
- g) (0.1 points) Calculate and represent graphically the domain of Q.

h) (0.1 points) Calculate and represent graphically the isoquant of level 1. Calculate one point on that isoquant.