This assignment is due in class on Thursday November 9, 2006—only hand-in solutions to questions 1. You may work together but should not copy answers verbatim and must hand-in individual assignments. Assignments will not be returned so make a copy of what you turn in.

1. This question refers to the production technology $y=KL^3$ which you used in problem set 7.
   a. Write down the firm’s profit maximization problem and derive the first order conditions. Interpret these conditions.
   b. Solve the problem to find the long run factor demands for K and L. Use these to derive the LR supply curve for this technology.
   c. Use your solution in (b) to write down the firm’s profit function and then verify Hotelling’s Lemma for any one of the inputs.

2. In problem set 7 you derived the short run cost function for the production technology $y=KL^3$ holding capital fixed.
   a. Derive the short run supply function for a firm using this technology, assuming that the firm is in a perfectly competitive market structure. This is an expression for output ($y$) as a function of output and input prices and the fixed factor. How does output (supply) vary with output price ($p$), holding everything else constant? Sketch this function.
   b. Explain what happens to the supply curve when the price of L increases.