GS/ECON 5010 Section "B" Assignment 3 F2014

due : Wednesday November 5 before class

Do all 5 questions. Each counts 20%.

1. Does the following production function exhibit decreasing, constant, or increasing returns to scale? Explain.

$$f(x_1, x_2, x_3) = 1 + x_1 \log(x_2 + 1) - \frac{1}{x_3 + 1}$$

2. Find the cost function $C(w_1, w_2, y)$ for the production function

$$f(x_1, x_2) = 2 - \frac{1}{x_1 + 1} - \frac{1}{x_2 + 1}$$

3. Find the cost function $C(w_1, w_2, w_3, y)$ for the production function

$$f(x_1, x_2, x_3) = \min(x_1, x_2) + x_3$$

4. Find the profit function $\pi(p, w_1, w_2)$ for a firm with a production function

$$f(x_1, x_2) = \sqrt{\min(x_1, x_2)}$$

5. What is the equation of the long–run supply curve for a perfectly–competitive industry, in which each of the (many) identical firms has a long run total cost function

$$TC(q) = q^3 - 24q^2 + 200q$$

where q is the quantity of output produced by the firm?