

# AP/ECON 2350 Q Assignment 1 W 2010–11

due : Tuesday Feb. 1, 4:00 pm  
Do all 5 questions. All count equally.

1. Give an example of a production function with increasing returns to scale, in which the inputs are perfect substitutes.

2. What is the profit-maximizing output for a firm in perfect competition, if its production function is

$$y = \ln(x_1 + 1) + \ln(x_2 + 1)$$

(where  $\ln$  refers to the natural logarithm function)?

3. What is the (long-run total) cost function for a firm with a production function

$$y = x_1 + \ln(x_2 + 1) \quad ?$$

4. If a firm's short-run total cost function is

$$SRTC = \frac{y^2}{z} + z$$

when it produces an output level of  $y$  using a plant size  $z$  :

(i) For a given plant size  $z$ , what output level minimizes the short-run average cost?

(ii) If the plant size  $z$  can be varied in the long-run, what is the equation of the firm's long-run average cost curve?

5. What is the equation of a firm's short-run supply curve, if its short-run total cost function is

$$SRTC = \frac{y^2}{z} + z$$

when it produces an output level of  $y$  using a plant size  $z$ ?