

IN-CLASS ASSIGNMENT: Production and Returns to Scale

Monday, March 23rd, 2015

5 points

Name: ANSWER KEY

1. Assume that the production for baseballs is given by $q = 10L^{0.4}K^{0.5}$. What returns to scale does this production function exhibit? Use both the sum of the exponents approach as well as doubling the inputs from 2 to 4 ($L = K = 2, L = K = 4$).

1pt (a) $\gamma = \alpha + \beta = 0.4 + 0.5 = 0.9 < 1$ ∴ DRS

b) $q = 10(2)^{0.4}(2)^{0.5}$
 $= 18.66$

2pt $q = 10(4)^{0.4}(4)^{0.5}$
 $= 34.8 < 2(18.66) = 37.32$

∴ when inputs doubled, outputs less than doubled. ∴ DRS

2. Now let's say that there is a technological change in the production of baseballs such that the production function is now $q = 100L^{0.4}K^{0.5}$. Is this a neutral or non-neutral technical change and why?

1pt
2pt This is a neutral tech. Δ b/c A increases from 10 to 100. Here, the efficiency or productivity of inputs does not change - the firm can simply produce more given same level of inputs.

1pt why