

Answer on Question #63335 – Math – Calculus

Question

A manufacturer of furniture has determined that the weekly production function for p thousand furniture is

$$p = 1000 + 20l^2k^3 - 5l^3 - 3k^4$$

where l is the number of labor hours per week in thousands and k is the amount of capital in thousands of RM per week. Determine:

- i) the marginal production function with respect to l
- ii) the marginal production function with respect to k

Solution

Marginal production function is the first derivative of production function.

- i) So, the marginal production function with respect to l is

$$MP_l = \frac{\partial}{\partial l} (1000 + 20l^2k^3 - 5l^3 - 3k^4) = 40lk^3 - 15l^2$$

- ii) The marginal production function with respect to k is

$$MP_k = \frac{\partial}{\partial k} (1000 + 20l^2k^3 - 5l^3 - 3k^4) = 60l^2k^2 - 12k^3$$

Answer: i) $40lk^3 - 15l^2$; ii) $60l^2k^2 - 12k^3$.