

Answer on Question #44261 – Economics – Microeconomics

Consider the following short-run production function (where L = variable input, Q = output):

$$Q = 6L^3 - 0.4L^2$$

a. Determine the marginal product function (MPL).

MPL is the derivative of production function, so $MPL = Q' = 18L^2 - 0.8L$

b. Determine the average product function (APL).

$$APL = Q/L = 6L^2 - 0.4L$$

c. Find the value of L that maximizes Q .

Q is maximized, when $Q' = MPL = 0$, so:

$$18L^2 - 0.8L = 0$$

$$L*(18L - 0.8) = 0$$

$$L = 0 \text{ or } L = 0.8/18 = 0.044$$

d. Find the value of L at which the marginal product function takes on its maximum value.

In our case MPL has no maximal points, so there is no maximal value.

e. Find the value of L at which the average product function takes on its maximum value.

In our case APL has no maximal points, so there is no maximal value.