Answer #1

K L Q MPk APK APL VMPk

0 20 0 NA NA NA NA

1 20 50 50 50.0 2.5 200

2 20 150 100 75.0 7.5 400

3 20 300 150 100.0 15 600

4 20 400 100 100.0 20 400

5 20 450 50 90.0 22.5 200

6 20 475 25 79.2 23.75 100

7 20 475 0 67.9 23.75 0

8 20 450 -25 56.3 22.5 -100

9 20 400 -50 44.4 20 -200

10 20 300 -100 30.0 15 -400

11 20 150 -150 13.6 7.5 -600

(a) Labor is fixed input and capital is variable input

answer: Option (A)

(b) Wage rate is $30 per hour

labor is fixed at 20 hours

fixed cost = ($30) \* (20)

Fixed cost = $600

Answer: $600

(c) 7 Units of capital are required to produce 475 units of output. The capital rental rate is $25.

The variable cost of producing 475 units of output = ($25) \* (7)

The variable cost of producing 475 units of output = $175

Answer: $175

(d) the number of capital which maximizes the profit occurs at the point where MPk = rental rate

MPk = rental rate = $25 corresponding to 6 units of capital.

Answer: 6 units

(e) 6 units of capital with 20 units of labor are producing 475 units of output.

variable cost = ($25) (6) = $150

Fixed cost = $600

Total cost of producing 475 units = $150 + $600 = $750

Total revenue from 475 units = (475) \* ($4) = $1900

Profit = TR -TC

Profit = $1900 - $600

Profit = $1300

answer: $1300

(f) Increasing marginal returns exist from 1 unit of capital to 4 units of capital.

the MPk is increasing between 1 unit to 4 units of capital

(g) decreasing marginal returns exist from 5 units of capiatl to 7 units of capital.

In this range, MPk is decreasing but remains positive.

Answer 2#

The firm should decrease the amount of capital used.

Explanation:

The wage rate is $12 per hour and capital is rented at $8 per hour.

The marginal product of labor is 60 units of output per hour and the marginal product of capital is 45 units of output per hour.

A manager hires labor and rents capital equipment in a very competitive market.

The ratio of marginal product of labor and wage rate

= 60/12

= 5

The ratio of marginal product of capital and rent

= 45/8

= 5.625

Since the ratio is greater for capital, it means that the manager should decrease the amount of capital used in the production process.