

(081)Math131:Finite MathematicsQuiz I(Ch:1.1-1.2,Ch:1.1-1.6) Jan.19,09

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Contents

Marks: 20; Time: 20 Minutes

Find the equilibrium quantity x and the equilibrium price p dollars for the fax machines.

NAME:.....

I.D.#:

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SERIAL# SECTION #: (check one)

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$x =$ _____

$p =$ _____ Dollars.

NOTE: SHOW ALL STEPS OF THE SOLUTION.

(48Tan27). (Marks : 10).

Equilibrium Quantity and Price.

The demand equation for the Schmidt-3000 fax machine is

$$3x + p - 1500 = 0,$$

where x is the quantity demanded per week and p is the unit price in dollars.

The supply equation is

$$2x - 3p + 1200 = 0,$$

where x is the quantity the supplier will make available in the market each week when the price is p dollars.

Q.2. 73Tan2SCE.(Marks: 10).

A farmer has 200 acres of land suitable for cultivating crops A^* , B^* , and C^* .

The cost per acre of cultivating crops A^* , B^* , and C^* is \$ 40, \$ 60, and \$ 80, respectively.

The farmer has \$ 12600 available for cultivation.

Each acre of crop A requires 20 labor-hours,

Each acre of crop B requires 25 labor-hours,

Each acre of crop C^* requires 40 labor-hours.

The farmer has a maximum of 5950 labor-hours available.

If she wishes to use all of her cultivatable land, the entire budget, and all the labor available,

how many acres of each crop should she plant?

Formulate but do not solve the problem.

let x = the number of acres of crop A^* .

let y = the number of acres of crop B^* .

let z = the number of acres of crop C^* .

$$\begin{cases} Qx + Ry + z = K \\ Lx + 25y + Mz = N \\ Ax + By + Cz = D \end{cases}$$

$$K = \underline{\hspace{2cm}}$$

$$L = \underline{\hspace{2cm}}$$

$$M = \underline{\hspace{2cm}}$$

$$N = \underline{\hspace{2cm}}$$

$$A = \underline{\hspace{2cm}}$$

$$B = \underline{\hspace{2cm}}$$

$$C = \underline{\hspace{2cm}}$$

$$D = \underline{\hspace{2cm}}$$

$$Q = \underline{\hspace{2cm}}$$

$$R = \underline{\hspace{2cm}}$$

SYSTEM OF EQUATIONS:

$$\left\{ \begin{array}{l} \underline{\hspace{1cm}} x + \underline{\hspace{1cm}} y + \underline{\hspace{1cm}} z = \underline{\hspace{1cm}} \\ \underline{\hspace{1cm}} x + \underline{\hspace{1cm}} y + \underline{\hspace{1cm}} z = \underline{\hspace{1cm}} \\ \underline{\hspace{1cm}} x + \underline{\hspace{1cm}} y + \underline{\hspace{1cm}} z = \underline{\hspace{1cm}} \end{array} \right.$$