

Scanned Documents

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Course: CSC 333

Level: 300 Lvl

Department: Computer Science

Question 1: Maximising Profit for a Factory

Obj. function (maximise): $3x + 4y$

Constraints

$$\text{Machine Time} = 2x + 3y \leq 12$$

$$\text{Raw material} = x + 2y \leq 8$$

$$\text{Non-Negativity} = x \geq 0, y \geq 0$$

Decision Variables:

x = Number of units of Product A produced

y = Number of units of Product B produced

	Product A	Product B	Total
Machine Time	2	3	12
Raw material	1	2	8
Profit	3	4	

$$x = 0 \text{ \& } y = 0$$

(let $y = 0$ in the machine Time Constraint)

$$2x + 3(0) = 12$$

$$\frac{2x}{2} = \frac{12}{2} = 6 \quad x = 6$$

$$\Rightarrow (6, 0)$$

(let $x = 0$ in the machine Time Constraint)

$$2(0) + 3y = 12$$

$$\frac{3y}{3} = \frac{12}{3} = 4 \quad y = 4$$

$$\Rightarrow (0, 4)$$

Machine

Raw ma

$$x = 8$$

Sub

$$2(8) = 16$$

$$16 - 4 = 12$$

$$12 - 3 = 9$$

$$9 - 2 = 7$$

Profit

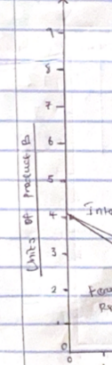
$$x = 8$$

$$x = 8$$

$$x = 1$$

$$\Rightarrow (0, 4)$$

Y-axis



The feasible

Corner Point

A

B

C

Optimal