$f'(x) = 0$

$\therefore 4(x-1)(x-3)(x-2) = 0$

$\therefore x = 1, 2, 3$

Therefore, the Possible intervals are:
$(-\infty, 1)$ $(1, 2)$ $(2, 3)$, and $(3, \infty)$

Now, Cheecking the Sign.

Function	$(-\infty, 1)$	$(1, 2)$	$(2, 3)$	$(3, \infty)$
$(x-1)$	-Ve	+Ve	+Ve	+Ve
$(x-2)$	-Ve	-Ve	+Ve	+Ve
$(x-3)$	-Ve	-Ve	-Ve	+Ve
$f'(x) = 4(x-1)(x-3)(x-2)$	-Ve	+Ve	-Ve	+Ve

From the above table, we have
$f'(x)$ is +ve on the interval $(1, 2)$ and $(3, \infty)$
Hence, $f(x)$ is increasing on $(1, 2) \cup (3, \infty)$

Also we have
$f'(x)$ is -Ve on interval $(-\infty, 1)$ and $(2, 3)$
Hence, $f(x)$ is decreasing on $(-\infty, 1) \cup (2, 3)$

Q13 Using integration; find length of the curve $y = 3 - x$ from $(-1, 4)$ to $(3, 0)$

Ans Solution

$y = 3 - x$

Differentiating w.r.t. x we have

$\frac{dy}{dx} = -1$

$\therefore$ the required length of the curve $y = 3 - x$ is given by

$$\int_{-1}^{3} \sqrt{1 + \left(\frac{dy}{dx}\right)^2}\, dx$$

~~$\therefore$ the required length of the~~

$$\int_{-1}^{3} \sqrt{1 + (-1)^2}\, dx \quad \left[\because \frac{dy}{dx} = -1\right]$$

$$\int_{-1}^{3} \sqrt{2}\, dx$$

$$\sqrt{2} \int_{-1}^{3} dx$$

$$\sqrt{2}[\,]_{-1}^{3}$$

$$\sqrt{2}(3 - (-1))$$

$$\sqrt{2}(3 + 1) \Rightarrow 4\sqrt{2} \text{ unit}$$

Q15 A Manufacture makes two types of furniture chairs and tables. Both the products are processed on three machines A_1, A_2, and A_3 Machine A_1 requires 3 hours for a table Machine A_2 required 5 hours for a chair Machine A_3 required 2 hours for a chair and 6 hours for a tables. The maximum time available on ~~metal~~ machines A_1, A_2 and A_3 is 36 hours, 50 hours and 60 hours respectively Profits are 20 $ per chair and 30 $ per tables formulate the above as a linear programming problem to max. the profit and solve it.

Solutions

Let x numbers of chairs and y no. of tables be made to get the max. profit.

maximize, $Z = 20x + 30y$ - (I)

Subject to constraints

for $A_1 \Rightarrow 3x + 3y \leq 36$ - (II)

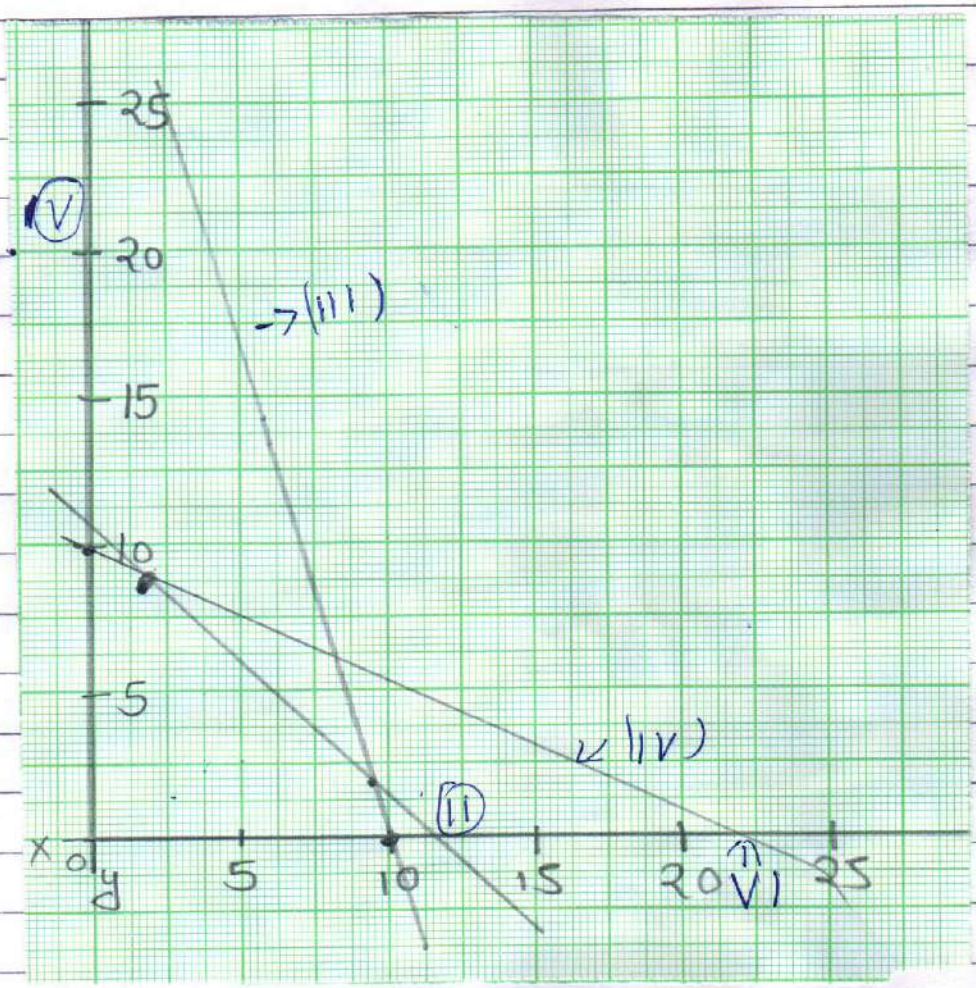
for $A_2 \Rightarrow 5x + 2y \leq 50$ - (III)

for $A_3 = 2x + 6y \leq 60$ - (IV)

and $x \geq 0$ (V)

and $y \geq 0$ - (VI)

The feasible region from the above constraints in the following:



Finding the coordinate of corner Points:

Corner Point O:

At Point 'O' is the origin, here Coordinate of Point O is (0,0)

Corner Point A:

On Solving equation (III) and (VI) we get

$x = 10$ and $y = 0$

∴ The Coordinate of Point A is (10, 0)

Corner Point B:

INDIRA GANDHI NATIONAL OPEN UNIVERSITY
REGIONAL CENTRE DELHI-1

Assignment Submission for Term End Exam December - 2020

(Please read the instructions given below carefully before submitting assignments)

1. Name of the Student : Parish Sharma
2. Enrollment Number : 2251652356
3. Programme Code : BCA
4. Course Code : BCS-012
5. Study Centre Code : 07162 (P)
6. Name of the Study Centre With complete address : Monad education and research Institute of tech (MERIT). A-9 Qutub Institutional Area 050 Rd, Near JNU, New Delhi-67
7. Mobile Number : 8700426536
8. E-mail ID : xBrodator2021@gmail.com
9. Above information is cross checked and it is correct: Yes/No

(The same details should also be filled up by the students in the google form, any mismatch in the form may result in rejection of assignment)

Date of Submission: 27/11/22

Parish Sharma

(Signature of the student)

A. General Instructions:-

1. Please do not send any assignment at any email of the Regional Centre Delhi-1, it will not be considered. No email in this regard will be responded individually.
2. Please write your name and enrollment no at the bottom of each page of your assignment.
3. Please retain ORIGINAL ASSIGNMENT submitted with you for record and also keep the assignment submission Email receipt automatically generated and received in your email given by you in google form in your safe custody. No other submission receipt will be given in this regard for online submission.
4. Please ensure that single legible PDF file is submitted for one course and it is successfully uploaded so that it may be downloaded for evaluation.

B. Assignment PDF file (10MB maximum should have following components in the the sequence given:

1. Copy of IGNOU Identity Card
2. Second page should be this document as Annexure-I.
3. Copy of valid/applicable assignment question paper attempted by you.
4. Hand written Assignments.