

Student's Name

Instructor's Name

Course Title

Date

## Math Question

All of the activities below refer to the following linear program

Equation	X coeff	Y coeff	Constraint	Gradient
Profit	140	100		
Constraint 1	9	12	7160	
Constraint 2	10	10	6540	
Constraint 3	12	6	6035	

Calculate the gradient of the profit and constraint lines of the linear program to determine which two lines meet at the optimal point

Solutions:

$$\Delta Y \quad 5$$

$$\text{Slope (m)} = \frac{\Delta Y}{\Delta X} = \frac{5}{7} = 0.71428571428571$$

$$\theta = \arctan\left(\frac{5}{7}\right) = 215.53767779197^\circ$$

$$\arctan\left(\frac{\Delta Y}{\Delta X}\right) + 180^\circ$$

$$\Delta X = 0 - 140 = -140$$

$$\Delta Y = 0 - 100 = -100$$

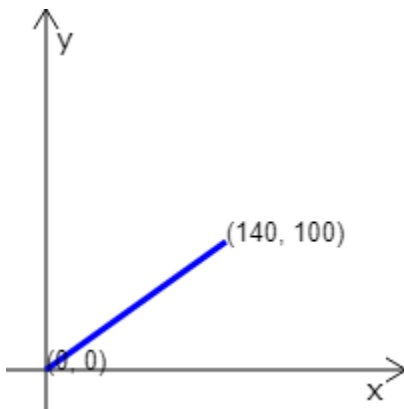
$$\text{Distance (d)} = \sqrt{\Delta X^2 + \Delta Y^2} = \sqrt{29600} = 172.04650534085$$

**Linear equation:**

$$y = 0.71428571428571x$$

When  $x=0$ ,  $y = 0$

When  $y=0$ ,  $x = -0$



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