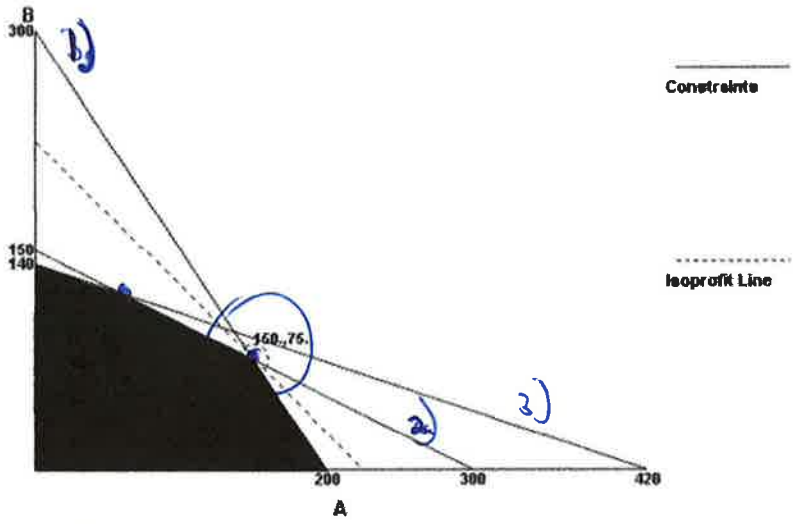
1. A manager must decide on the mix of products to produce for the coming week. Product A requires three minutes per unit for molding, two minutes per unit for painting, and one minute for packing. Product B requires two minutes per unit for molding, four minutes for painting, and three minutes per unit for packing. There will be 600 minutes available for molding, 600 minutes for painting, and 420 minutes for packing. Both products have contributions of $1.50 per unit.

   a. Algebraically state the objective and constraints of this problem.

   b. Plot the constraints on the grid below and identify the feasible region.

The objective of the problem is to maximize 1.50A + 1.50B,

The constraints are 3A + 2B ≤ 600, 2A + 4B ≤ 600, and 1A + 3B ≤ 420. The plot and feasible region appear in the graph below.



Max 1.5A + 1.5B

st
1) 3A + 2B ≤ 600
2) 2A + 4B ≤ 600
3) 1A + 3B ≤ 420

1) 3A + 2B = 600
A = 0 B = 300
A = 200 B = 0

2) 2A + 4B = 600
A = 0 B = 150
A = 300 B = 0

3) 1A + 3B = 420
A = 0 B = 140
A = 420 B = 0

3, 2 Intersection

2A + 4B = 600
1A + 3B = 420

2A + 4B = 600
-2A - 6B = -840

2B = 240
B = 120

1A + 3(120) = 420
1A = 60

1, 2 Intersection

-2(3A + 2B = 600) -2
2A + 4B = 600

-6A - 4B = -1200
2A + 4B = 600

4A = 600
A = 150

2(150) + 4B = 600
4B = 300
B = 75

Corners	1.5A + 1.5B
(0, 0)	0
(200, 0)	300
(0, 140)	210
(60, 120)	270
(150, 75)	337.5 *