30.04.23

$Z = 5$
$X_1 = 1{,}75 \quad X_2 = 3{,}25$

$1{,}5 \leq X_1 \geq 2$

$Z = 1{,}5$
$X_1 = 1 \quad X_2 = 0{,}5$

$0{,}5 \leq X_2 \geq 1$

$Z = 4{,}67$
$X_1 = 2 \quad X_2 = 2{,}67$

$1{,}5 + 3$

$Z = 5$
$X1 = 1{,}75 \quad X2 = 3{,}25$

$3{,}1 - 1{,}5 = 1{,}6$

$7{,}3 \cdot 1{,}5 = 8{,}8 = 4{,}4$
2

30.04.23

Avaliação da Prova de Programação Inteira
8º ADS - Matutino

(1) Resolva o PPI abaixo utilizando o método Branch e Bound

max $z = x_1 + x_2$

s.a

I $-2x_1 + 2x_2 \leq 3$

II $7x_1 + 3x_2 \leq 22$

$x_1, x_2 \geq 0$ e inteiros

$-2x_1 + 2x_2 = 3$

$7x_1 + 3x_2 = 22$

$-2.0 + 2x_2 = 3$

$0 + 2x_2 = 3$

$2x_2 = 3 - 0$

$2x_2 = 3$

$x_2 = 3/2$

$x_2 = 1,5$

$-2x_1 + 2.0 = 3$

$-2x_1 + 0 = 3$

$-2x_1 = 3 - 0$

$-2x_1 = 3$

$x_1 = 3/-2$

$x_1 = -1,5$

$7.0 + 3x_2 = 22$

$0 + 3x_2 = 22$

$3x_2 = 22 - 0$

$3x_2 = 22$

$x_2 = 22/3$

$x_2 \approx 7,33$

$7x_1 + 3.0 = 22$

$7x_1 + 0 = 22$

$7x_1 = 22 - 0$

$7x_1 = 22$

$x_1 = 22/7$

$x_1 = 3,14$

(3) $-2x_1 + 2x_2 = 3$

(2) $7x_1 + 3x_2 = 22$

$-6x_1 + 6x_2 = -9$

$14x_1 + 6x_2 = 44$

$20x_1 = 35$

$x_1 = 35/20$

$x_1 = 1,75$

I	x_1	x_2
	1,5	0
	0	-1,5

II	x_1	x_2
	7,33	0
	0	3,14

26 ↑

37 →

0,7

1,5

7,3

8,8

2

7

10

0,7

×3

2,1

01.05.23

$-2x_1 + 2x_2 = 3$

(1) $7x_1 + 3x_2 = 22$

$-14x_1 + 14x_2 = 21$

$14x_1 + 6x_2 = 44$

$20x_2 = 65$

$x_2 = 65/20$

$x_2 =$

(1) $-2x_1 + 2x_2 = 3$

(2) $7x_1 + 3x_2 = 22$

$6x_1 - 6x_2 = -9$

$14x_1 + 6x_2 = 44$

$20x_1 = 35$

$x_1 = 35/20$

$x_1 =$

$x_1 = 1,75$

x_2 (1) $-2x_1 + 2x_2 = 3$

(2) $7x_1 + 3x_2 = 22$

$-14x_1 + 14x_2 = 21$

$14x_1 + 6x_2 = 44$

$20x_2 = 65$

$x_2 = 65/20$

$x_2 =$

65 | 20
60 | 3,25
050
040
100
100
0

35 | 20
20 | 1,75
150
140
100
100
0

35 | 13
26 | 2,69
090
078
120

01 05 23

$Z = 5$
$X1 = 1,75$
$X2 = 3,25$
$1 \leq X1 \leq 2$

$Z = X1 + X2$
$Z = 1,75 + 3,25$
$Z = 5,00$

(B) $-2X1 + 2X2 = 3$
$-2.1 + 2X2 = 3$
$-2 + 2X2 = 3$
$2X2 = 3 + 2$
$2X2 = 5$
$X2 = \frac{5}{2}$
$X2 = 2,5$

$Z = 1 + 2,5$
$Z = 3,5$

(C) $-7X1 + 3X2 = 22$
$-7.2 + 3X2 = 22$
$14 + 3X2 = 22$
$-3X2 = 22 - 14$
$-3X2 = 8$
$X2 = \frac{8}{3}$
$X2 = 2,66$

$Z = 2 + 2,66$
$Z = 4,66$

01.05.23

(D)

$x_1 = +1.x$ | $7x_1 + 3x_2 = 22$
$x_2 = 2.$ | $7x_1\ 3.2 = 22$
$x_1 + x_2 = 3$

Apenas pelo grafico e possivel obter

(E) Forma da Area de Busca pois esta o 3 esta atingindo da linha de busca

(F) $-7x_1 + 3x_2 = 22$
$7x_1 + 3.2 = 22$
$7x_1 + 6 = 22$
$7x_1 = 22 - 6$
$7x_1 = 16$
$x_1 = \frac{16}{7}$
$x_1 = 2{,}28$

16 | 7
14 | 2,28
020
14
060
56
04

$x_1 = 2{,}28$
$x_2 = 2$
4,28

01.08.23

⑥ Dem. Solução para 3 casas fora do gráfico

(H) $-2x_1+2x_2=3$ $7x_1+3x_2=22$

$-2.2+2x_2=3$ $7.2+3x_2=22$

$-4+2x_2=3$ $14+3x_2=22$

$2x_2=3+4$ $3x_2=22-14$

$2x_2=-1$ $3x_2=8$

$x_2=\frac{-1}{2}$ $x_2=\frac{8}{3}$

$x_2=0,5$ $x_2=3,$

(I) $-2x_1+2x_2=3$ $7x_1+3x_2=22$

$-2.3+2x_2=3$ $7.3+3x_2=22$

$-6+2x_2=3$ $21+3x_2=22$

$2x_2=3-6$ $3x_2=22-21$

$2x_2=-3$ $3x_2=1$

$x_2=\frac{-3}{2}$ $x_1=\frac{1}{3}$

$x_2=-1,5$ $x_1=0,33$

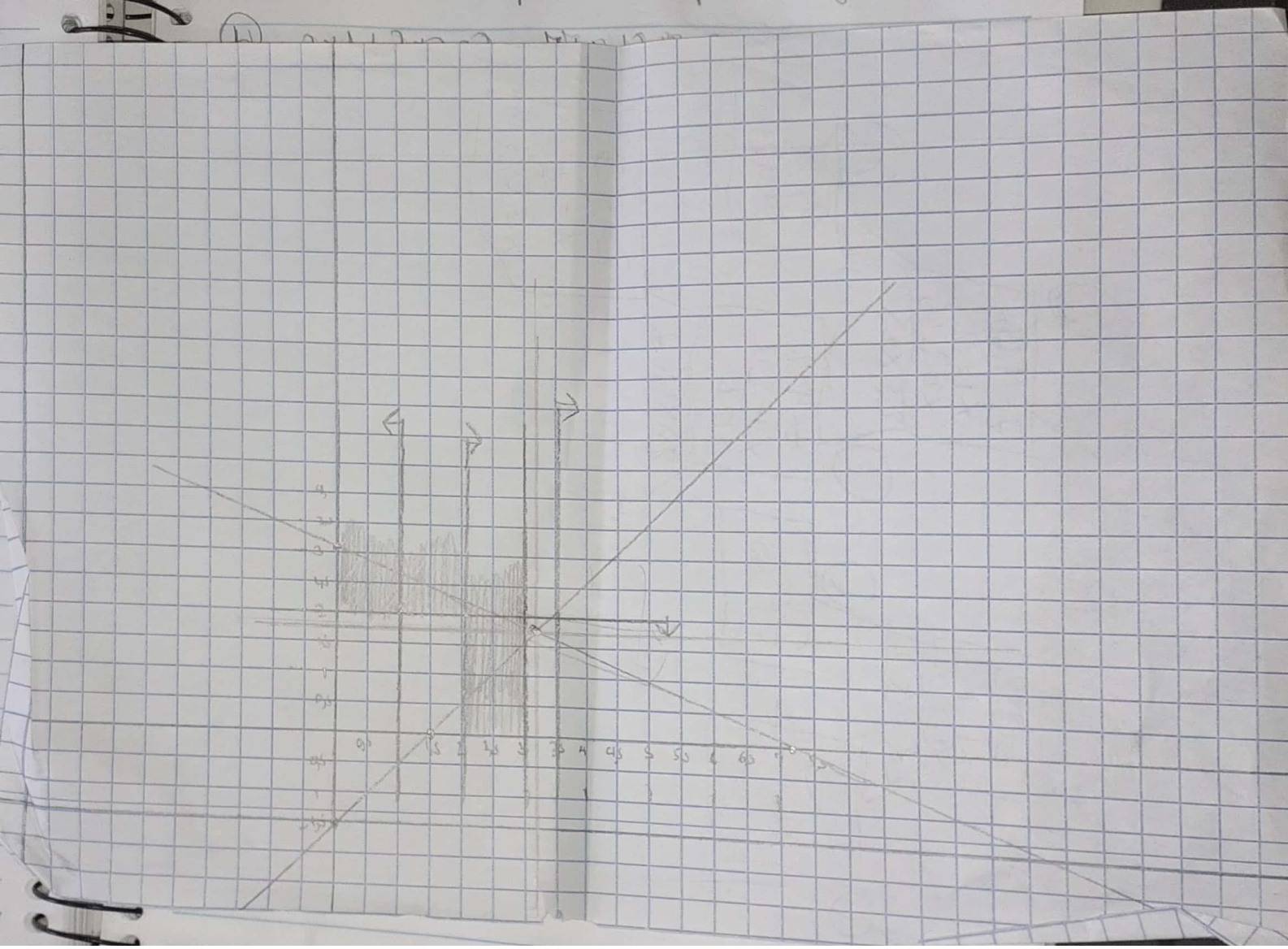
x_1+x_2

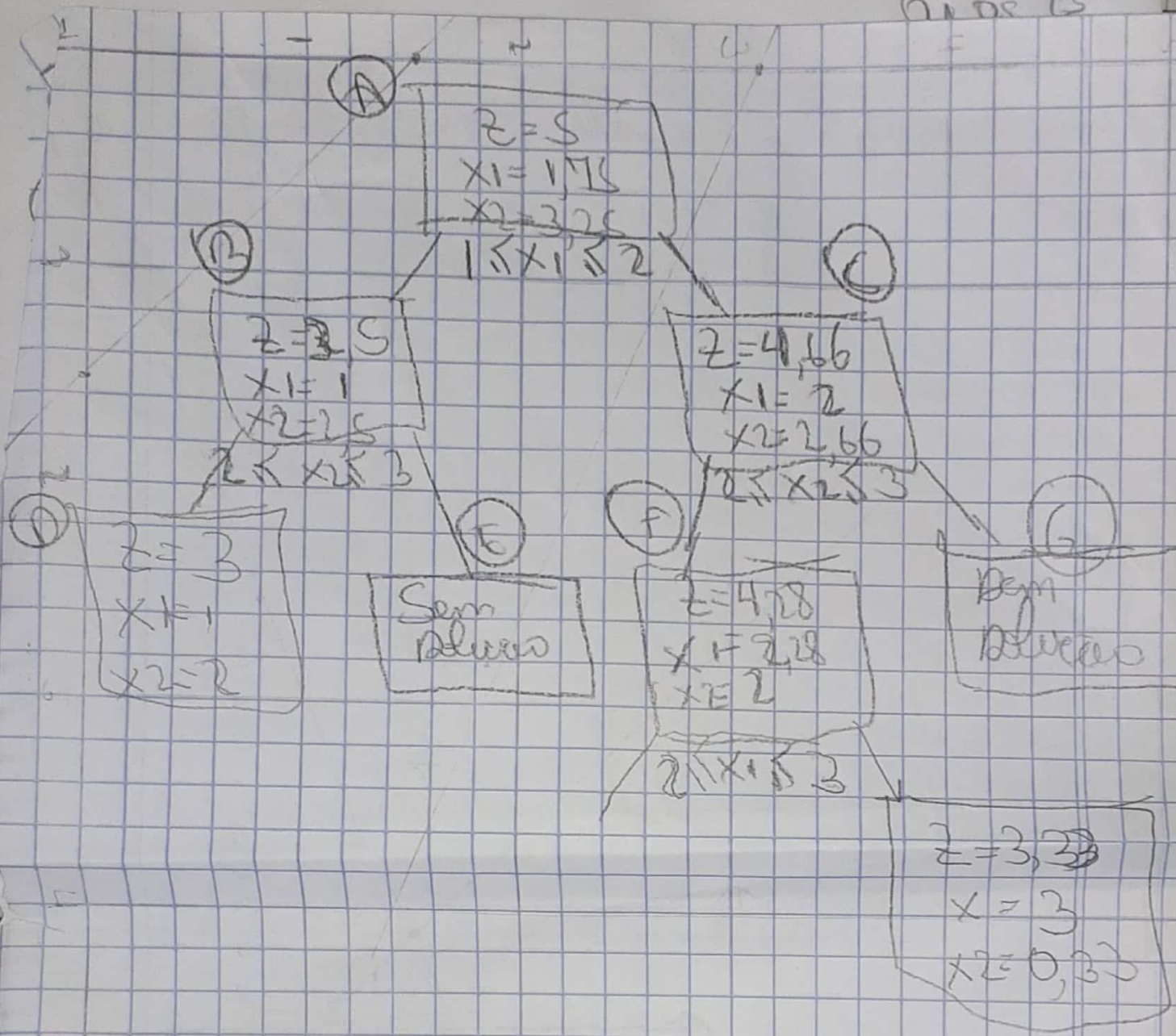
$3+0,33$

$\boxed{3,33}$

01.05.23

⑥ Bem Bolsista para 3 este fora do gráfico




A
Z = 5
X1 = 1,75
X2 = 3,25
1 ≤ X1 ≤ 2
B
Z = 3,5
X1 = 1
X2 = 2,5
2 ≤ X2 ≤ 3
C
Z = 4,66
X1 = 2
X2 = 2,66
2 ≤ X2 ≤ 3
D
Z = 3
X1 = 1
X2 = 2
E
Sem Óleo
F
Z = 4,28
X1 = 2,28
X = 2
2 ≤ X1 ≤ 3
G
Sem Óleo
Z = 3,33
X = 3
X2 = 0,33