

Cenário Solas

21/1/11

→ 1ª) Passar 1: observando a menor quantidade de Suprimentos, no lado esquerdo

Passar 2: Subtraia S_1 e D_1 , se aparecer o negativo, marque para S_2 , se aparecer negativo para D_2

$S_1 \rightarrow D_1$ $S_2 \rightarrow D_2$ $S_2 \rightarrow D_4$

$S_1 \rightarrow D_2$ $S_2 \rightarrow D_3$ $S_3 \rightarrow D_4$

Solução

| Unit cost | D_1 | D_2 | D_3 | D_4 | Supply |
|-----------|-------|-------|-------|-------|--------|
| S_1 | 5 | 10 | 0 | 0 | 15 |
| S_2 | 0 | 5 | 15 | 5 | 25 |
| S_3 | 0 | 0 | 0 | 10 | 10 |
| Demand | 5 | 15 | 15 | 15 | - |

2) Supply = $15 + 25 + 10 = 50$

Demand = $5 + 15 + 15 + 15 = 50$

1º Selecionar menor custo = 2 ($S_1 - D_1$)

2º mais barato

$D_2 = 15$ } $D_2 = 25 - 15 = 10$

$S_1 = 15$ } $S_1 = 0$

3º Excluir a coluna

$D_1 = 5$, $S_3 = 10$

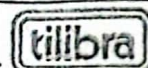
$D_1 = 0$, $S_3 = 10 - 5 = 5$

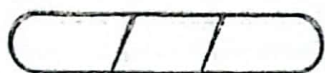
4º Prior

$S_2 \rightarrow D_3 = 5$, $S_2 = 25$

$D_3 = 15 - 5 = 10$

$S_2 = 25 - 15 = 10$





$$5^{\circ} S_1 - D_4 = 11$$

$$D_4 = 15, S_2 = 10$$

$$D_4 = 15 - 10 = 5$$

$$S_2 = 0$$

$$6^{\circ} S_3 - D_4 = 18$$

$$S_3 = 5$$

Solução

| Unit Cost | D_1 | D_2 | D_3 | D_4 | Supply |
|-----------|-------|-------|-------|-------|--------|
| S_1 | 0 | 15 | 0 | 0 | 15 |
| S_2 | 0 | 0 | 15 | 10 | 25 |
| S_3 | 5 | 0 | 0 | 5 | 10 |
| Demand | 5 | 15 | 15 | 15 | - |

$$\text{Custo } T = (15 \cdot 2) + (5 \cdot 4) + (5 \cdot 2) + (0 \cdot 20) + (5 \cdot 18) = 175$$

3) 1.º Alterar D_3

$$D_3 = 0, S_2 = 0$$

$$D_3 = 15, S_2 = 25$$

$$\hookrightarrow D_3 = 0, S_2 = 25 - 15 = 10$$

$$2^{\circ} D_2 = 15, S_1 = 15$$

$$S_1 - D_2 = 0, D_2 = 0, S_1 = 0$$

$$3^{\circ} S_3 - D_1 = 4$$

$$D_1 = 5, S_3 = 0$$

$$D_1 = 0, S_3 = 10 - 5 = 5$$

$$4^{\circ} D_4 = 15, S_3 = 5$$

$$D_4 = 15 - 5 = 10$$

$$S_3 = 0$$

$$5^{\circ} D_4 = 10, S_2 = 10$$

$$S_2 = D_4, D_4 = 0, S_2 = 0$$

Solucio

| unit cost | D1 | D2 | D3 | D4 | Supply |
|-----------|----|----|----|----|--------|
| S1 | 0 | 15 | 0 | 10 | 15 |
| S2 | 0 | 0 | 15 | 10 | 25 |
| S3 | 5 | 0 | 0 | 5 | 10 |
| Demand | 5 | 15 | 15 | 15 | - |

$$\text{Costo Total} = (15 \cdot 2) + (5 \cdot 4) + (15 \cdot 0) + (10 \cdot 2) + (5 \cdot 1) = 75$$

$$4) \text{ argum 1: } \min(1, 1, 2)$$

$$\hookrightarrow 2 - 1 = 1$$

$$\text{argum 2} = \min(3, 4, 5)$$

$$\hookrightarrow 4 - 3 = 1$$

$$\text{argum 3} = \min(2, 3, 3)$$

$$\hookrightarrow 3 - 2 = 1$$

columnas

$$\text{Distinc 1} = \min(1, 3, 2)$$

$$\rightarrow 3 - 1 = 2$$

Destino 2: min (2, 4, 3)

$$\hookrightarrow 4 - 2 = 2$$

Destino 3: min (1, 5, 3)

$$\hookrightarrow 5 - 1 = 4$$

| custo | D1 | D2 | D3 | Supply |
|----------|----|----|-------|--------|
| origem 1 | 1 | 2 | 1(20) | 6 |
| " 2 | 3 | 4 | 5 | 40 |
| " 3 | 2 | 3 | 3 | 30 |
| Demandas | 30 | 20 | 6 | - |

origem 1 - Excluido

$$1 \quad 2 \Rightarrow 4 - 3 = 1$$

$$1 \quad 3 \Rightarrow 3 - 2 = 1$$

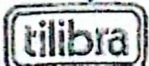
Destino 1: $3 - 2 = 1$

$$1 \quad 2 \Rightarrow 4 - 3 = 1$$

| custo | D1 | D2 | D3 | Supply |
|----------|----|----|----|--------|
| origem 2 | 3 | 4 | 5 | 40 |
| demandas | 0 | 20 | 0 | 0 |

Solucao

| custo | D1 | D2 | D3 | Supply |
|----------|----|----|----|--------|
| origem 1 | 0 | 0 | 26 | 6 |
| " 2 | 0 | 20 | 0 | 40 |
| " 3 | 30 | 0 | 0 | 30 |
| Demandas | 30 | 20 | 20 | 0 |



Total 3160

Página 100

1a)

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 1 | 6 | 6 | 8 | 1 |
| R ₂ | 6 | 5 | 0 | 7 | 5 |
| R ₃ | 4 | 2 | 0 | 5 | 3 |
| R ₄ | 6 | 2 | 0 | 1 | 3 |
| R ₅ | 3 | 4 | 0 | 3 | 4 |

2a) columna

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 0 | 4 | 0 | 4 | 0 |
| R ₂ | 5 | 3 | 0 | 6 | 4 |
| R ₃ | 3 | 0 | 0 | 4 | 2 |
| R ₄ | 5 | 0 | 0 | 0 | 2 |
| R ₅ | 2 | 2 | 0 | 2 | 3 |

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 0 | 2 | 0 | 1 | 6 |
| R ₂ | 3 | 1 | 0 | 6 | 2 |
| R ₃ | 3 | 0 | 0 | 2 | 0 |
| R ₄ | 5 | 0 | 0 | 0 | 0 |
| R ₅ | 2 | 0 | 0 | 0 | 1 |

etiene $\Rightarrow R-C_1, R_2-C_3, R_3-C_2,$
 R_4-C_4, R_5-C_5



→ Tabula 2

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 3 | 9 | 2 | 3 | 7 |
| R ₂ | 6 | 1 | 5 | 6 | 6 |
| R ₃ | 9 | 4 | 7 | 10 | 3 |
| R ₄ | 2 | 5 | 4 | 3 | 1 |
| R ₅ | 9 | 6 | 2 | 4 | 5 |

Red. Linhas

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 1 | 7 | 6 | 1 | 5 |
| R ₂ | 5 | 0 | 4 | 5 | 5 |
| R ₃ | 6 | 1 | 4 | 7 | 0 |
| R ₄ | 1 | 4 | 3 | 1 | 0 |
| R ₅ | 7 | 4 | 0 | 2 | 3 |

Red. Col

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 0 | 6 | 0 | 0 | 5 |
| R ₂ | 4 | 0 | 4 | 4 | 5 |
| R ₃ | 5 | 0 | 4 | 6 | 0 |
| R ₄ | 0 | 3 | 3 | 0 | 0 |
| R ₅ | 6 | 3 | 0 | 1 | 3 |

| | C ₁ | C ₂ | C ₃ | C ₄ | C ₅ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| R ₁ | 0 | 6 | 0 | 0 | 5 |
| R ₂ | 3 | 0 | 4 | 4 | 4 |
| R ₃ | 4 | 6 | 4 | 6 | 0 |
| R ₄ | 0 | 3 | 3 | 0 | 0 |
| R ₅ | 3 | 3 | 0 | 1 | 2 |

Solução

$R_1 = C_1, R_2 = C_2, R_3 = C_3, R_4 = C_4, R_5 = C_3$

4)

| | 1 | 2 | 3 | 4 |
|---|----|----|----|----|
| 1 | 30 | 30 | - | 0 |
| 2 | 50 | 20 | 0 | 10 |
| 3 | 60 | 0 | 20 | - |
| 4 | 50 | 0 | 40 | 50 |

Resto cal

| | 1 | 2 | 3 | 4 |
|---|----|----|----|----|
| 1 | 0 | 30 | - | 0 |
| 2 | 20 | 10 | 0 | 10 |
| 3 | 30 | 0 | 20 | - |
| 4 | 20 | 0 | 40 | 5 |

Total

$$\Rightarrow 50 + 20 + 30 + 70 = 170$$