**JAWABAN TUGAS KEL 4806**

Tabel Awal

| cj | Basis | K | 2 | 1 | 3 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|
| | | | x1 | x2 | x3 | s1 | s2 | s3 |
| 0 | s1 | 59 | 1 | 1 | 1 | 1 | 0 | 0 |
| 0 | s2 | 75 | 2 | 0 | 3 | 0 | 1 | 0 |
| 0 | s3 | 54 | 0 | 1 | 6 | 0 | 0 | 1 |
| | zj | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | cj-zj | | **2** | **1** | **3** | **0** | **0** | **0** |

Nilai baris cj-zj terbesar di kolom x3. Kolom pivot kolom x3

<------- Model PL

Maks Z=2x1+x2+3x3

Batasan

x1+x2+x3<=59

2x1+3x3<=75

x2+6x3<=54

x1>=0, x2>=0, x3>=0

Bentuk standar

Maks Z=2x1+x2+3x3+0s1+0s2+0s3

Batasan

x1+x2+x3+s1=59

2x1+3x3+s2=75

x2+6x3+s3=54

x1>=0, x2>=0, x3>=0, s1>=0, s2>=0, s3>=0

Tabel I

| cj | Basis | K | 2 | 1 | 3 | 0 | 0 | 0 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | x1 | x2 | x3 | s1 | s2 | s3 | |
| 0 | s1 | 59 | 1 | 1 | 1 | 1 | 0 | 0 | =59/1=59 |
| 0 | s2 | 75 | 2 | 0 | 3 | 0 | 1 | 0 | =75/3=25 |
| 0 | s3 | 54 | 0 | 1 | 6 | 0 | 0 | 1 | =54/6=9 |
| | zj | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | cj-zj | | **2** | **1** | **3** | **0** | **0** | **0** | |

**Menentukan baris pivot dan nilai pivot**

Baris pivot s3

Nilai pivot = 6

Nilai kolom [3 x3] menggantikan baris [0 s3]

Tabel II

| cj | Basis | K | 2 | 1 | 3 | 0 | 0 | 0 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | x1 | x2 | x3 | s1 | s2 | s3 | |
| 0 | s1 | 50 | 1 | 5/6 | 0 | 1 | 0 | -1/6 | =50/0=~ |
| 0 | s2 | 48 | 2 | -1/2 | 0 | 0 | 1 | -1/2 | =48/2=24 |
| 3 | x3 | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | =9/0=~ |
| | zj | 27 | 0 | 1/2 | 3 | 0 | 0 | 1/2 | |
| | cj-zj | | **2** | **1/2** | **0** | **0** | **0** | **-1/2** | |

Tabel II belum optimal. Kolom pivot berikutnya kolom x1

Nilai **positif terkecil** ada di baris s2, yaitu 24, sehingga terpilih sbg baris pivot. Dengan elemen pivot = 1

Nilai kolom [2 x1] menggantikan nilai baris [0 s2]

<------- Berdasarka nilai pivot, maka baris s1, s2 dan x3 menjadi sbb:

Baris x3 (dibagi elemen pivot)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 |

Baris s1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 59 | 1 | 1 | 1 | 1 | 0 | 0 | |
| (1)x | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | - |
| | 50 | 1 | 5/6 | 0 | 1 | 0 | -1/6 | |

Baris s2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 75 | 2 | 0 | 3 | 0 | 1 | 0 | |
| (3)x | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | - |
| | 48 | 2 | -1/2 | 0 | 0 | 1 | -1/2 | |

Tabel III

| cj | Basis | K | 2 | 1 | 3 | 0 | 0 | 0 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | x1 | x2 | x3 | s1 | s2 | s3 | |
| 0 | s1 | **26** | 0 | 13/12 | 0 | 1 | -1/2 | 1/12 | =26/(12/13)=24 |
| 2 | x1 | **24** | 1 | -1/4 | 0 | 0 | 1/2 | -1/4 | =24/(-1/4)=-96 |
| 3 | x3 | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | =9/(1/6)=54 |
| | zj | **75** | 2 | 0 | 3 | 0 | 1 | 0 | |
| | cj-zj | | **0** | **1** | **0** | **0** | **-1** | **0** | |

Tabel III belum optimal. Kolom pivot berikutnya kolom x2
Nilai **positif terkecil** ada di baris s1, yaitu 24, sehingga terpilih sbg baris pivot. Dengan elemen pivot = 13/12
Nilai kolom [1 x2] menggantikan nilai baris [0 s1]

<------- Berdasarka nilai pivot, maka baris x1, s1 dan x3 menjadi sbb:

Baris x1 (dibagi elemen pivot)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 24 | 1 | -1/4 | 0 | 0 | 1/2 | -1/4 | |

Baris s1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 50 | 1 | 5/6 | 0 | 1 | 0 | -1/6 | |
| (1)x | 24 | 1 | -1/4 | 0 | 0 | 1/2 | -1/4 | - |
| | 26 | 0 | 13/12 | 0 | 1 | -1/2 | 1/12 | |

Baris x3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | |
| (0)x | 24 | 1 | -1/4 | 0 | 0 | 1/2 | -1/4 | - |
| | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | |

Tabel IV

| cj | Basis | K | 2 | 1 | 3 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|---|---|
| | | | x1 | x2 | x3 | s1 | s2 | s3 |
| 1 | x2 | **24** | 0 | 1 | 0 | 12/13 | -6/13 | 1/13 |
| 2 | x1 | **30** | 1 | 0 | 0 | 3/13 | 5/13 | -3/13 |
| 3 | x3 | **5** | 0 | 0 | 1 | -2/13 | 1/13 | 2/13 |
| | zj | **99** | 2 | 1 | 3 | 12/13 | 7/13 | 1/13 |
| | cj-zj | | **0** | **0** | **0** | **-12/13** | **-7/13** | **-1/13** |

Tabel IV sudah optimal
Solusi

x1 =30
x2 =24
x3 =5
Z maks=2x1+x2+3x3
=2*(30)+(24)+3*(5)
=60+24+15
=99

<------- Berdasarka nilai pivot, maka baris x2, x1 dan x3 menjadi sbb:

Baris x2 (dibagi elemen pivot)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 24 | 0 | 1 | 0 | 12/13 | -6/13 | 1/13 | |

Baris x1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 24 | 1 | -1/4 | 0 | 0 | 1/2 | -1/4 | |
| (-1/4)x | 24 | 0 | 1 | 0 | 12/13 | -6/13 | 1/13 | - |
| | 30 | 1 | 0 | 0 | 3/13 | 5/13 | -3/13 | |

Baris x3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 9 | 0 | 1/6 | 1 | 0 | 0 | 1/6 | |
| (1/6)x | 24 | 0 | 1 | 0 | 12/13 | -6/13 | 1/13 | - |
| | 5 | 0 | 0 | 1 | -2/13 | 1/13 | 2/13 | |