## 最优化第二次作业

##### 1.(3)

将目标函数乘以-1化为极小模型，增加为松弛变量，为人工变量，则目标函数变为

约束条件变为

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
|  | -1 | 2 | 4 | 1 | 0 | 0 | 0 | 4 |
|  | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 5 |
|  | -1 | 2 | 1 | 0 | 0 | -1 | 1 | 1 |
| 检验系数 | -1 | 2 | 1 | 0 | 0 | -1 | 0 | 1 |

经过变换后可得第二阶段的最后矩阵为

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  | 1 | 0 | 0 |  |  | 0 | 2 |
|  | 0 | 1 | 0 |  |  |  | 1 |
|  | 0 | 0 | 1 |  | 0 |  | 1 |
| 检验系数 | 0 | 0 | 0 |  |  |  | -1 |

所以，最优解为，最优值为1

##### 1.(4)

增加为松弛变量，为人工变量，则目标函数变为

约束条件变为

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  | 2 | -1 | 1 | 0 | 0 | 0 | 8 |
|  | 2 | 1 | 0 | -1 | 0 | 1 | 2 |
|  | 1 | 2 | 0 | 0 | 1 | 0 | 10 |
| 检验系数 | 2 | 1 | 0 | -1 | 0 | 0 | 2 |

经过变换后可得第二阶段的最后矩阵为

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  |  | 0 | 1 | 0 |  | 13 |
|  |  | 1 | 0 | 0 |  | 5 |
|  |  | 0 | 0 | 1 |  | 3 |
| 检验系数 | 0 | 0 | 0 | 0 | -1 | -2 |

所以，最优解为，最优值为-2

##### 2.(5)

将目标函数乘以-1化为极小化模型，增加

约束条件变为

取，得初始矩阵为

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | b |
|  | 2 | 1 | -1 | 1 | 0 | 0 | 0 | 5 |
|  | 4 | 3 | 1 | 0 | -1 | 1 | 0 | 3 |
|  | -1 | 1 | 1 | 0 | 0 | 0 | 1 | 2 |
| 检验系数 | 3M-3 | 4M+2 | 2M-1 | 0 | -M | 0 | 0 | 5M |

经过变换后，得最后的矩阵为

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | b |
|  | 3 | 0 | -2 | 1 | 0 | 0 | -1 | 3 |
|  |  | 1 |  | 0 | 0 | 0 | 1 | 2 |
|  | -7 | 0 | 2 | 0 | 1 | -1 | 3 | 3 |
| 检验系数 | -1 | 0 | -3 | 0 | 0 | -M | -2-M | -4 |

所以，最优解为，最优值为4

##### 2.(7)

增加为松弛变量，为人工变量，则约束条件变为

取为基变量，得初始矩阵

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | b |
|  | 2 | -3 | 1 | 0 | 0 | 1 |
|  | 2 | 3 | 0 | -1 | 1 | 8 |
| 检验系数 | 2M-1 | 3M-1 | 0 | -M | 0 | 8M+1 |

经过变换后得最后的矩阵为

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | b |
|  | 4 | 0 | 1 | -1 | 1 | 9 |
|  |  | 1 | 0 |  |  |  |
| 检验系数 |  | 0 | 0 |  |  |  |

所以，最优解为，最优值为