

لی ۵۶۰ برنامہ ریزی خطی :

خوراک کھور
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$$\begin{array}{lcl} \text{مقدار استفاده از ذرت} & x_1 = x_{11} + x_{12} + x_{13} \\ \text{آب} & x_2 = x_{21} + x_{22} + x_{23} \\ \text{سویا} & x_3 = x_{31} + x_{32} + x_{33} \\ \text{ماهی} & x_4 = x_{41} + x_{42} + x_{43} \end{array}$$

۱) خوراک کھور :

$$y \leq 1 x_1 + 4 x_2 + 10 x_3 + 1 x_4$$

$$y \leq 10 x_{11} + 5 x_{21} + 12 x_{31} + 1 x_{41}$$

$$y \leq 4 x_{12} + 10 x_{22} + 4 x_{32} + 4 x_{42}$$

$$y \leq 1 x_{13} + 10 x_{23} + 4 x_{33} + 4 x_{43} \leq 1$$

$$x_{11} + x_{21} + x_{31} + x_{41} = 10$$

۲) گوشت :

$$y \leq 1 x_{12} + 4 x_{22} + 10 x_{32} + 1 x_{42}$$

$$y \leq 10 x_{13} + 5 x_{23} + 12 x_{33} + 1 x_{43}$$

$$y \leq 4 x_{11} + 10 x_{21} + 4 x_{31} + 4 x_{41}$$

$$y \leq 1 x_{12} + 4 x_{22} + 4 x_{32} + 1 x_{42} \leq 4$$

$$x_{12} + x_{22} + x_{32} + x_{42} = 4$$

طیور

$$4 \leq 1x_{1p} + 4x_{2p} + 10x_{3p} + 15x_{4p} \leq 4$$

$$4 \leq 10x_{1p} + 5x_{2p} + 12x_{3p} + 1x_{4p}$$

$$4 \leq 4x_{1p} + 10x_{2p} + 4x_{3p} + 4x_{4p}$$

$$4 \leq 1x_{1p} + 4x_{2p} + 4x_{3p} + 4x_{4p} \leq 4$$

$$x_{1p} + x_{2p} + x_{3p} + x_{4p} = 1$$

هزینه

$z =$

$$\min z = 312x_1 + 0.12x_2 + 0.125x_3 + 0.12x_4$$

ذرت = $\frac{1}{32}$ vitamin , $\frac{10}{32}$ protein , $\frac{4}{32}$ calcium

سویا = $\frac{4}{27}$ vitamin , $\frac{5}{27}$ protein , $\frac{10}{27}$ calcium

دانه سویا = $\frac{10}{34}$ vitamin , $\frac{12}{34}$ protein , $\frac{4}{34}$ calcium

پودری = $\frac{4}{27}$ vitamin , $\frac{1}{27}$ protein , $\frac{4}{27}$ calcium

simplex :

$$\min z = 0,12x_{11} + 0,14x_{12} + 0,15x_{13} + 0,17x_{21} + 0,12x_{22} + 0,1x_{23} \\ + 0,12x_{31} + 0,12x_{32} + 0,12x_{33} + 0,12x_{41} + 0,12x_{42} + 0,12x_{43}$$

$$0 \leq x_{11} + x_{12} + x_{13} \leq 4000 \rightarrow x_{11} + x_{12} + x_{13} + y_1 = 4000, y_1 \geq 0$$

$$F - y_1 = 0$$

$$0 \leq x_{21} + x_{22} + x_{23} \leq 10000 \rightarrow x_{21} + x_{22} + x_{23} + y_2 = 10000, y_2 \geq 0$$

$$F - y_2 = 0$$

$$0 \leq x_{31} + x_{32} + x_{33} \leq 5000 \rightarrow x_{31} + x_{32} + x_{33} + y_3 = 5000, y_3 \geq 0$$

$$F - y_3 = 0$$

$$0 \leq x_{41} + x_{42} + x_{43} \leq 20000 \rightarrow x_{41} + x_{42} + x_{43} + y_4 = 20000, y_4 \geq 0$$

$$F - y_4 = 0$$

$$4000 \leq \frac{1}{12}x_{11} + \frac{1}{14}x_{12} + \frac{1}{15}x_{13} + \frac{1}{17}x_{21} + \frac{1}{12}x_{22} + \frac{1}{10}x_{23}$$

$$4000 \leq \frac{1}{12}x_{11} + \frac{1}{14}x_{12} + \frac{1}{15}x_{13} + \frac{1}{17}x_{21} + \frac{1}{12}x_{22} + \frac{1}{10}x_{23} \rightarrow F - y_1 = 4000, y_1 \geq 0$$

$$10000 \leq \frac{1}{12}x_{11} + \frac{1}{14}x_{12} + \frac{1}{15}x_{13} + \frac{1}{17}x_{21} + \frac{1}{12}x_{22} + \frac{1}{10}x_{23} \rightarrow F - y_2 = 10000, y_2 \geq 0$$

$$5000 \leq \frac{1}{12}x_{11} + \frac{1}{14}x_{12} + \frac{1}{15}x_{13} + \frac{1}{17}x_{21} + \frac{1}{12}x_{22} + \frac{1}{10}x_{23} \rightarrow F - y_3 = 5000, y_3 \geq 0$$

$$F + y_4 = 20000$$

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دالة هدف و متغيرات