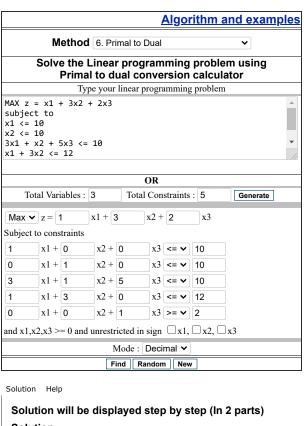


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Solution

Find dual from primal conversion
MAX z = x1 + 3x2 + 2x3
subject to
x1 <= 10
x2 <= 10
3x1 + x2 + 5x3 <= 10
x1 + 3x2 <= 12









and  $x_1, x_2, x_3 \ge 0$ ;

all  $\,\geq\,$  constraints can be converted to  $\,\leq\,$  type by multipling both sides by -1

CLICK TO GET A MAX  $z_x = x_1 + 3x_2 + 2x_3$  subject to

NOW!

Dual is (Solution steps of Dual by BigM method)

$$\begin{split} & \text{MIN} \ z_y = \ 10 \ y_1 \ + \ 10 \ y_2 \ + \ 10 \ y_3 \ + \ 12 \ y_4 \ - \ 2 \ y_5 \\ & \text{subject to} \\ & y_1 \ + \ 3 \ y_3 \ + \ y_4 \ \ge 1 \\ & y_2 \ + \ y_3 \ + \ 3 \ y_4 \ \ge 3 \\ & 5 \ y_3 \ - \ y_5 \ge 2 \end{split}$$
 and  $y_1, y_2, y_3, y_4, y_5 \ge 0;$ 



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