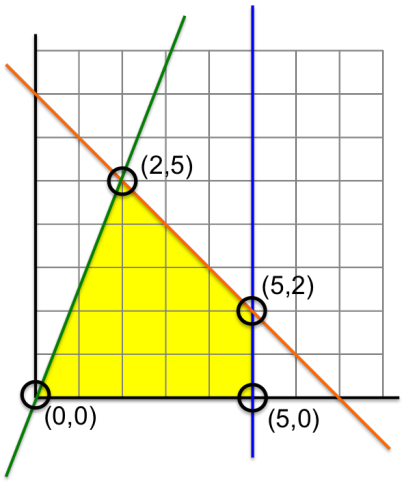
Homework #16 Key

7.1

The feasible region is shown in yellow in the figure below.



We know that that one of the vertices (circled) must be optimal, so computing the value at each of them:

$5(0) + 3(0) = 0$
$5(2) + 3(5) = 25$
$5(5) + 3(0) = 25$
$5(5) + 3(2) = 31$

reveals that the vertex $(5, 2)$ is maximal, with value 31.

7.3

Let M_i = number of cubic meters of material i.

Maximize:

$\$1,000M_1 + \$1,200M_2 + \$12,000M_3$

with the following constraints:

$$2M_1 + M_2 + 3M_3 \leq 100$$
$$M_1 + M_2 + M_3 \leq 60$$
$$M_1 \leq 40$$
$$M_2 \leq 30$$
$$M_3 \leq 20$$
$$M_1, M_2, M_3 \geq 0$$